UNITED STATES DEPARTMENT of AGRICULTURE

INVENTORY
of
POTENTIAL and EXISTING
UPSTREAM RESERVOIR SITES
CHICOPEE STUDY AREA
Massachusetts

U.S. DEPARTMENT of AGRICULTURE
Soil Conservation Service
Economic Research Service
Forest Service

In cooperation with the

MASSACHUSETTS WATER RESOURCES COMMISSION

MAY 1973

FOREWORD

The United States Department of Agriculture, in cooperation with the Massachusetts Water Resources Commission, is participating in the five-year Massachusetts Water Resources Study of the water and related land resources of the Commonwealth. One phase of this study is the inventorying of potential and existing upstream reservoir sites.

The Commonwealth of Massachusetts, through the Water Resources Commission, provides guidance and a significant financial contribution toward this phase of the Massachusetts Water Resources Study. The Massachusetts Water Resources Commission, to fulfill its responsibilites under Chapter 620, Acts of 1956 and Chapter 767, Acts of 1970, requires technical and engineering data and information on potential upstream reservoir sites. The Department of Agriculture is participating in this study under the provisions of Section 6 of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress, as amended) which authorizes the Secretary of Agriculture to cooperate with other federal, state and local agencies, in surveys and investigations of the watersheds of rivers and other waterways as a basis for the development of coordinated programs.

This report, prepared by the Soil Conservation Service and submitted by the USDA Field Advisory Committee to the Water Resources Commission, identifies and inventories potential and existing upstream reservoir sites within the Chicopee Study Area. The identification of potential Public Law 566 projects was not a purpose of this study. No attempt was made to locate or evaluate possible PL 566 watersheds.

The Massachusetts Water Resources Commission will use this report, together with other reports and studies prepared by the United States Department of Agriculture and others, in the preparation of a comprehensive plan for the Commonwealth's water and land resources.

The information and data contained herein will also assist local, state and federal agencies in their specific planning activities for the coordinated and orderly conservation, development, utilization and management of the water and land resources to meet the rapidly expanding needs.

Dr. Benjamin Isgur, State Conservationist
Soil Conservation Service and
Chairman, Field Advisory Committee
U.S. Department of Agriculture
29 Cottage Street
Amherst, Massachusetts 01002

Arthur W. Brownell, Commissioner
Massachusetts Department of
Natural Resources and
Chairman, Massachusetts Water
Resources Commission
100 Cambridge Street
Boston, Massachusetts 02202

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Massachusetts Department of Public Works
Northampton, Massachusetts

Worcester County Engineer

Soil Conservation Service personnel prepared this report. Ernest Richards was responsible for the development of the engineering phases of the report and directed the collection of basic data. Donald Haley, Linda Murphy, John Gammell and Chester Konieczny collected and processed basic site data. Donald Mills reported on geological conditions. Ed Newport drafted the report maps. James Wesoloski was responsible for editing and publication.

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Scale
5 0 5 Miles

LOCATION of SUB-WATERSHEDS CHICOPEE STUDY AREA

MASSACHUSETTS

USDA-SCS-HYATTSVILLE, MD 1972

2001

INVENTORY OF

EXISTING AND POTENTIAL UPSTREAM RESERVOIR SITES

in the

CHICOPEE STUDY AREA

prepared by the

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

in cooperation with the

MASSACHUSETTS WATER RESOURCES COMMISSION

INTRODUCTION

This report presents data on 178 potential and 82 existing reservoir sites in the Chicopee Study Area, Franklin, Hampden, Hampshire and Worcester Counties, Massachusetts.

DESCRIPTION OF STUDY AREA

The Chicopee Study Area is located in Central Massachusetts and includes all of the Chicopee River Watershed. Major tributary streams include the Swift, Quaboag, and Ware Rivers. The Quabbin Reservoir is located within the Study Area.

The Study Area covers about 467,000 acres or 729 square miles and is divided into nine subwatersheds. Portions of 38 cities and towns lie within the Study Area.

CRITERIA

Potential Reservoir Sites

The primary considerations used to identify potential reservoir sites were: suitable topography for a dam and reservoir, sufficient drainage area to maintain the proposed reservoir and a relatively undeveloped pool area.

The following criteria were used as a guide in site selection:

1. Drainage area -- larger than one-half square mile, but not greater than 50 square miles.

2. Ratio of drainage area to beneficial pool area -- not less than 10 to 1.

3. Minimum beneficial pool depth -- 7 feet at the dam.

4. Minimum beneficial pool area -- 10 acres.

5. Minimum beneficial pool capacity -- 100 acre feet.

6. Maximum beneficial pool capacity -- storage volume equal to 25 inches of runoff from the drainage area.

7. Maximum height of dam -- 100 feet.

8. Pool area relatively undeveloped -- no housing developments, industrial areas, or major highways inundated.

Existing Reservoirs

Existing reservoirs were located using the U.S. Geological Survey (USGS) quadrangle sheets. Two criteria were used to determine sites to be included in this report:

1. Surface area -- at least 10 surface acres or a pond identified by name on the USGS topographic map.

2. Man-made dam -- Natural ponds and beaver dams are excluded.

INVESTIGATIONS AND ANALYSES

Potential Reservoir Sites

Sites were located using the latest available USGS 7½ minute quadrangle sheets. Natural basins, or topography favorable for storage of water, and an economical location for an embankment were the primary considerations in the initial site selection. Watershed boundaries were delineated on the quadrangle sheets and the drainage area was determined for each initial site selected. Water storage areas and volumes available upstream of the site centerline were calculated. Data were also obtained to calculate the volume of earth fill required for the dam and any supplementary dikes that might be needed to contain a reservoir.

At each site a field reconnaissance was made that included an inventory of land and facilities (man-made structures) that would be affected if a dam and reservoir were developed at the site. If it was determined that the reservoir would flood extensive man-made facilities; or a study of the elevation-area-storage data showed that the site did not meet criteria for the study, the site was dropped from further consideration.

A surficial geologic investigation was made of each potential site to determine any obvious geologic conditions that might affect the site's water-holding capability or require extensive foundation preparation. A preliminary geological report was prepared which outlined the types of materials that might be expected at the site and their effect on construction costs and waterholding capabilities for the site. The report of geologic conditions was based on the geologist's interpretation following the surficial investigation of the site and the surrounding area. No borings were made at any site and subsurface conditions may vary from those indicated in this report.

Hydrologic and hydraulic data were calculated using methods developed by the Soil Conservation Service. Rainfall data were obtained from Technical Paper 40 and 49, U.S. Department of Commerce, Weather Bureau. Preliminary design calculations for several levels of development for each site were processed by electronic computer, using a program which determines the most economical type of principal spillway; determines the runoff and peak flow for the 100-year frequency, 10-day duration principal spillway design storm; routes the design storm to set the emergency spillway crest; performs other routings to determine the design high water and top of dam elevations; calculates embankment yardage and other construction quantities; determines the total estimated cost of the reservoir; and calculates "safe yield" for water supply purposes.

Existing Reservoirs

An inventory was made of 82 existing reservoirs that cover at least ten acres or are identified by name on the USGS quadrangle sheet, and are formed by a man-made dam. The reservoirs were located using the USGS quadrangle sheets. An engineer made a field reconnaissance to determine the physical condition of each structure and to assess the potential for expansion of the reservoir. While at the site, photographs were taken. Selected photographs are included in this report. Ownership and use information for the reservoirs was obtained from records of the Massachusetts Department of Public Works and from local interviews.

COSTS

Preliminary cost estimates for potential reservoir sites were based on costs and land values as of 1971. The cost estimates include: (1) construction costs; (2) contingencies; (3) engineering and administrative services necessary for surveys, geology, final design, and construction inspection; (4) cost for land required for the reservoir and construction of the dam and spillway; and (5) costs associated with the purchase or relocation of man-made facilities affected by the constructed reservoir.

Construction costs were based on recent dam construction contract costs in Massachusetts. A factor for contingencies, equal to 15% to 35% of the construction cost, was included to account for items that were not considered at this intensity of study. Engineering and administrative services ranged from 20% to 40% of the construction cost.

Costs for land acquisition were based on an evaluation of current real estate transactions and market conditions. Land with potential for development was valued at from $1,000 to $10,000 per acre; land with little development potential was valued at from $200 to $500 per acre. Land values also varied from site to site based on the proximity to developed areas and highways; development taking place in the area; and suitability for development. Land needed for the dam, spillway and design high water pool was included in the land acquisition cost.

Cost estimates are presented on the basis of a cost per acre-foot of storage and cost per surface acre to provide a comparison between different sites and different levels of development at the same site. Costs are based on preliminary estimates; firm cost estimates for any site can be determined only after completion of detailed geological and engineering investigations, final structural designs, and land appraisals.

No cost estimates are included for existing reservoirs.

REPORT CONTENTS

This report is divided into sections based on the nine subwatersheds in the Chicopee Study Area. A location map, placed after the Table of Contents, outlines the area covered by each subwatershed. To aid local residents in determining which sites are located in their city or town, the Municipal Index of Sites lists the site identification numbers for potential and existing reservoir sites within each municipality and the page number of this report on which data are recorded.

Each subwatershed section provides Site Data for the potential and existing reservoir sites located,within the subwatershed, which are included in this report.

Potential Reservoir Sites

These site data include a Location paragraph which contains a narrative description of the location of the site in reference to nearby roads, railroads, or other physical landmarks. In addition, the latitude, longitude and USGS quadrangle sheet name are provided to enable more accurate location.

Man-made facilities that would be flooded by a reservoir at the potential site are presented in the Facilities Affected paragraph of the site data. The elevation of existing facilities was estimated during the engineer's field reconnaissance with the aid of the USGS quadrangle sheets.

A summary of the preliminary geologic report is contained in the Geologic Conditions paragraph. The material in the abutments (the valley sides) and the foundation (the valley floor) is described. An estimate is made of the depth to bedrock and the probable type of rock. The availability of fill material which would be used in the dam construction is noted.

Possible leakage problems are indicated and the waterholding capability of the site is subjectively described as "good," "fair," or "poor." The waterholding capability statement is based on the geologist's interpretation of the surficial conditions he has observed during the field reconnaissance.

Engineering Notes provide information which should be helpful in preliminary design of a dam. One of the abutments is recommended as the location for an excavated emergency spillway. The excavated spillway might be in earth or rock cut -- depending upon the depth to bedrock in the abutment. If an excavated emergency spillway is unable to carry the required flows at safe velocity, the need for a concrete emergency spillway is noted. If waterholding capability can be significantly improved with a practical cutoff through pervious abutment or foundation material, this fact is also noted.

When it is known that some portion of a reservoir site is located on land owned by a governmental or quasi-public unit, the information is presented in a Public Ownership paragraph.

Sites which meet study criteria have been analyzed using a computer program which develops preliminary structure designs for several levels of beneficial pool. Results of the computer program are presented in the tables entitled Summary Data for Potential Upstream Reservoir Sites at the end of each subwatershed section. Two information lines contain data on site drainage area, USGS quadrangle name on which the site is located, latitude and longitude of the site, site rating, stream water quality, and principal spillway design storm runoff and peak flow. The site rating is based on geologic conditions and the expected waterholding capability. Sites are given one of the following ratings:

1. Suitable for deep permanent storage (over 10 feet in depth).
2. Best suited for shallow water storage (3 to 5 foot maximum depth).
3. Best suited for temporary storage (e.g., floodwater and sediment storage).

In order to furnish the most data for each potential reservoir site, each site was considered to be suitable for deep permanent storage (rating "1") for purposes of design and analyses. The rating for any site could change based on detailed geologic investigations.

Stream water quality ratings are based on classifications assigned by the Division of Water Pollution Control, Massachusetts Water Resources Commission, and published in Water Quality Standard, June 1967 and are as follows:

"Class A -- Waters designated for use as public water supply in accordance with Chapter 111 of the General Laws. Character uniformly excellent.

"Class B -- Suitable for bathing and recreational purpose including water contact sports. Acceptable for public water supply with appropriate treatment.
Suitable for agricultural, and certain industrial cooling and process uses; excellent fish and wildlife habitat; excellent aesthetic value.

"Class C -- Suitable for recreational boating; habitat for wildlife and common food and game fishes indigenous to the region; certain industrial cooling and process uses; under some conditions acceptable for public water supply with appropriate treatment. Suitable for irrigation of crops used for consumption after cooking. Good aesthetic value.

"Class D -- Suitable for aesthetic enjoyment, power, navigation, and certain industrial cooling and process uses. Class "D" waters will be assigned only where a higher water use class cannot be attained after all appropriate waste treatment methods are utilized."

The Summary Data for Potential Upstream Reservoir Sites tables also contain data for as many as six possible levels of development at each site. Elevations of the beneficial pool, emergency spillway crest, design high water, and top of dam are shown along with pertinent storage volumes, surface areas and depths. Total cost expressed in dollars per acre foot of storage and dollars per surface acre are provided to aid in comparison of levels of development. The emergency spillway type which was used in the preliminary design is indicated by an emergency spillway type code explained in the table notes.

These tables are photo-reductions of the computer output sheets. Elevations are shown to the tenth of a foot and costs to the nearest $10, but are not to be considered that accurate because of the limited investigations made with preliminary data. All the Summary Data Tables are based on preliminary reconnaissance-type investigations and computer-produced structure designs. Additional detailed engineering, geologic and design investigations must be made before final site selection, land acquisition and final design would be practical.

Estimated safe yield for each potential reservoir are also shown on the tables and were based on information extrapolated from data developed by Professor G. R. Higgins, Civil Engineering Department, University of Massachusetts. These estimated safe yields are based on a 95% chance, or the minimum yield that could be expected 19 years out of 20 -- taking into consideration reservoir storage-volume and expected runoff. These data do not consider evaporation, seepage, or prior upstream usage losses.

The Committee on Rainfall and Yield of Drainage Areas of the New England Water Work Association has recommended a figure of 600,000 gallons per day per square mile as a maximum economically feasible safe yield. Data for some of the potential sites in this report show a safe yield above 600,000 gallons per square mile per day; these higher values are useful to define the upper portion of a discharge-storage curve for preliminary analysis. For detailed evaluation of a potential site or water supply purposes, the recommendation of the New England Water Works Association should be considered.

Existing Reservoirs

Site data for existing reservoir sites are presented in a different format from the potential reservoir site data:

Location is indicated by reference to nearby roads, railroads or other physical landmarks. The appropriate USGS quadrangle sheet is indicated.

Physical data (surface area, height of dam, and drainage area) were estimated from the quadrangle sheet and by field reconnaissance.

Potential for Expansion of the existing reservoir is estimated and any major man-made facilities which would be affected by an enlarged reservoir are noted. In some instances, the drainage area of the reservoir does not meet the criteria requiring a 10 to 1 drainage area to pool area ratio, below which there may be relatively high evaporation losses. An increase in reservoir surface area might increase evaporation losses to a point where the reservoir could not be maintained during the summer months. These situations are indicated by the statement "Small drainage area may limit further expansion."

A description of the dam and spillway system is included in Remarks paragraph. Construction materials, spillway type and size, and condition of the structures are noted.

Ownership and Use of the reservoir is indicated, if available.

Some existing reservoirs that did not meet the study criteria (10 acre minimum surface area and a man-made dam) have been included in the report to present the information that may have been obtained.

MAPS

Individual subwatershed maps appear at the end of each section which indicate the location of the potential and existing reservoir sites in that subwatershed. The maps are reductions of mosaics prepared from 7½ minute USGS quadrangle sheets (1" = 2000' scale). The quadrangle sheets used and published dates are listed on the maps. Potential sites that met study criteria and which have information in the tables are indicated with a red rectangle surrounding the site number. The maximum beneficial pool (from the Summary Data for Potential Upstream Reservoir Sites Table) is indicated by a blue large-wave pattern. The drainage area for each of these sites is indicated by green shading. Potential sites in subwatershed CP-27, which are located on land owned or controlled by the Metropolitan District Commission, are indicated only by the red rectangle surrounding the site number.

Existing reservoir sites are identified by a red circle surrounding the site number and a blue small-wave pattern over the existing surface area.

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-27, Quabbin Reservoir

This subwatershed covers about 119,800 acres in the Towns of New Salem, Orange, Shutesbury and Wendell (Franklin County), Belchertown, Pelham and Ware (Hampshire County), and Athol, Barre, Hardwick, Petersham and Phillipston (Worcester County). A large portion of the subwatershed is owned or controlled by the Metropolitan District Commission (M.D.C.)

The principal feature of this subwatershed is Quabbin Reservoir, a 24,700 acre water supply reservoir serving primarily the metropolitan Boston area.

Major tributaries to Quabbin Reservoir are the Swift River and its East and West Branches. The Swift River originates in Wendell and flows northeasterly, then southeasterly through New Salem to Quabbin Reservoir. The West Branch of the Swift River originates in Wendell and flows south through Shutesbury to Quabbin Reservoir. The East Branch originates in Phillipston and flows southwesterly through Petersham to Quabbin Reservoir. Elevations range from a high of about 1,380 feet in Phillipston to about 520 feet at Quabbin Reservoir. Geology of the area is characterized as gneiss bedrock overlain by 10 to 25 feet of glacial till or englacial drifts.

Thirteen potential reservoir sites and seven existing reservoirs were studied in detail. Twenty-eight potential reservoir sites were located on land owned or controlled by the M.D.C.. No further investigations were made at these sites since it was considered unlikely that they would ever be developed as reservoirs.

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SITE CP-2710

Location: On Bigelow Brook about 2,100 feet downstream from Lincoln Road in Phillipston, Mass.

Athol, Mass. USGS quadrangle

Latitude: 42°32'22" Longitude: 72°10'00"

Facilities Affected:

Facility	Elevation
Lincoln Road	1120
Barn	1120
Telephone cable	1120
Utility poles	1120

Geologic Conditions: Both abutments are thin discontinuous outcrops of glacial till with many large boulders and shallow to bedrock. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 10-15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-2711

Location: On Popple Camp Brook about 1,400 feet downstream from Lincoln Road in Phillipston, Mass.

Athol, Mass. USGS quadrangle

Latitude: 42°32'26" Longitude: 72°09'15"

Facilities Affected:

Facility	Elevation
Utility poles	1005
Lincoln Road	975

Geologic Conditions: Both abutments are thin discontinuous outcrops of glacial till underlain by gneiss bedrock. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes? The left abutment is recommended for the emergency spillway location.

****

SITE CP-2712

Location: On Shattuck Brook about 50 feet upstream from Petersham Road in Phillipston, Mass.

Athol, Mass. USGS quadrangle

Latitude: 42°31'56" Longitude: 72°08'17"

Facilities Affected: None below elevation 1090.

Geologic Conditions: Both abutments are glacial till with many large boulders. The surficial deposits are swamp and gneiss bedrock. The bedrock is slightly fractured in outcrops. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. The foundation is about 40% covered with large boulders. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The emergency spillway should be located on the abutment requiring the lesser amount of rock excavation.

****

SITE CP -2713

Location: On Stony Brook about 2000 feet upstream from Popple Camp Road in Petersham, Mass.

Athol, Mass. USGS quadrangle

Latitude: 42°30'49" Longitude: 72°10'15"

Facilities Affected: None below elevation 1070.

Geologic Conditions: Both abutments are glacial till underlain by gneiss or schist bedrock. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. There is a rock and earth fill dam with a deteriorating concrete shell at the site.

****

SITE CP-2714

Location: On the East Branch of the Swift River about 100 feet upstream from Popple Camp Road in Petersham, Mass.

Athol, Mass. USGS quadrangle

Latitude: 42°30'45" Longitude: 72°09'18"

Facilities Affected: None below elevation 970.

Geologic Conditions: Both abutments are thin englacial drift underlain by gneiss bedrock. The bedrock is moderately jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The emergency spillway should be located on the abutment requiring the lesser amount of rock excavation.

****

SITE CP-2715

Location: On the East Branch of the Swift River about 3300 feet downstream from Popple Camp Road in Petersham, Mass.

Athol, Mass. USGS quadrangle

Latitude: 42°30'18" Longitude: 72°09'38"

Facilities Affected:

Facility	Elevation
Popple Camp Road	925
Utility poles	925

Geologic Conditions: The left abutment is thin discontinuous outcrops of glacial till underlain by gneiss bedrock. The right abutment is glacial till. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-2716

Location: on Moccasin Brook about 5000 feet downstream from Narrow Lane in Phillipston, Mass.

Athol, Mass. USGS quadrangle

Latitude: 42°30'28" Longitude: 72°07'43"

Facilities Affected: None below elevation 1080.

Geologic Conditions: Both abutments are englacial drift. Surficial deposits are swamp and englacial drift. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be fair to good. Slight leakage is expected in both abutments and the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: The site is within the Phillipston Wildlife Management Area owned by the Massachusetts Division of Fisheries and Game.

****

SITE CP-2717

Location: On the Swift River about 450 feet upstream from East Street (at Brown Pond) in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°29'36" Longitude: 72°09'59"

Facilities Affected:

Facility	Elevation
Shaw Road	850
Utility poles	850

Geologic Conditions: The right abutment is glacial till above Shaw Road and ice-contact sand and gravel at the toe of the abutment. The left abutment is glacial till with many large boulders. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be fair. Leakage is expected through the sand and gravel on the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel at the toe of the right abutment.

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SITE CP-2718

Location: On Moccasin Brook about 3500 feet upstream from East Street in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°29'38" Longitude: 72°07'50"

Facilities Affected:

Facility	Elevation
Glashene Road	1060
Underground telephone cable	1055
Cabin	1045

Geologic Conditions: Both abutments are thin glacial till underlain by gneiss bedrock. Surficial deposits are swamp and glacial till. Depth to bedrock in the foundation is estimated to be from 25 to 35 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

Public Ownership: The site is immediately adjacent to the Phillipston Wildlife Management Area owned by the Massachusetts Division of Fisheries and Game.

****

SITE CP-2719

Location: On Moccasin Brook about 1200 feet upstream from Quaker Drive in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°29'09" Longitude: 72°08'54"

Facilities Affected:

Facility	Elevation
Glashene Road	970
East Street	970
2 houses, garage	970
Utility poles, telephone cable	948

Geologic Conditions: Both abutments are glacial till. Surficial deposits are glacial till and granitic bedrock. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be at the surface with a thin cobble cover. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-2720

Location: On Moccasin Brook about 1300 feet upstream from Quaker Drive in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°28'26" Longitude: 72°09'42"

Facilities Affected:

Facility	Elevation
Quaker Drive	845

Geologic Conditions: The right abutment is terrace sand and gravel at the toe and bedrock on the slope. The left abutment is terrace sand and gravel possibly underlain by glacial till. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be fair. Leakage is expected through the gravel on both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. Waterholding capabilities might be improved by a cutoff through the gravel on the abutments.

****

SITE CP-2721

Location: On Rutland Brook about 1600 feet upstream from Connor Pond in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°28'04" Longitude: 72°09'19"

Facilities Affected: None below elevation 870.

Geologic Conditions: Both abutments are glacial till. Bedrock may outcrop high on the left abutment. There are many boulders in the foundation area. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was not located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-2722

Location: On Rutland Brook about 4050 feet downstream from Mill Road in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°28'07" Longitude: 72°08'07"

Facilities Affected: None below elevation 1005.

Geologic Conditions: The left abutment is thin discontinuous outcrops of silty sand with cobbles and boulders. The right abutment is outwash sand and gravel on the low terrace and glacial till and bedrock on the steep portion. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be fair. Some leakage is expected through the sand and gravel on the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the right abutment. If the site is developed to elevation 1000, a dike will be required northeast of the dam.

****

SITE CP-2717 (Brown's Pond)

Location: On the East Branch of the Swift River near the intersection of Shaw Road and East Street in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
849	15	12	4600	7.2

Potential for Expansion: Please refer to Site Data and Design Summary Table for Potential Site CP-2717 for details.

Remarks: The dam is a 100 foot long field-stone masonry structure. The spillway is a weir, 33 feet long and 2 feet deep. There are two gated outlets to drain the pond. There is leakage through the dam. The downstream slope of the left abutment contains rock remnants from an old dam.

Ownership and Use: The site is owned by Martha B.W. Day and is used primarily for recreation.

SITE CP-2750 (Lake Mattawa)

Location: At the head of the Middle Branch of the Swift River in Orange, Mass.

Orange, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq.Mi.)
592	115	9	1100	1.7

Potential for Expansion: Limited; houses and cottages line the entire shore. The relatively small drainage area also limits the potential for expansion.

Remarks: The dam is a 300 foot long earth-fill structure with a 10 foot top width. The dam is located at the south end of the lake. The upstream slope is riprapped; the downstream slope is grassed. The principal spillway is a rock masonry weir, 15 feet long and 4 feet deep. There is also a controlled outlet at the north end of the lake. The masonry weir shows signs of crumbling. The rock apron of the outlet channel has partially eroded.

Ownership and Use: The site is owned by the Town of Orange, Fire District, and is used primarily for recreation.

SITE CP-2751
(Carter Pond)

Location: On Silver Brook near Carter Pond Road in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
786	45	10	1300	2.0

Potential for Expansion: It appears that the surface area could be nearly doubled. A much larger dam and two auxiliary dikes would be required.

Remarks: The dam is a 165 foot long rock and earth-fill structure with a 9 foot top width. The principal spillway is a 4.5 foot wide weir fitted with boards for water level control. There is also a gate for draining the pond. The emergency spillway, located on the right abutment is 20 feet long and 11 feet wide There is slight leakage through the principal spillway section and the concrete in the wingwalls is spalling. There is brush growing on the downstream slope.

Ownership and Use: The site is owned by J.A. Carter and is used for fishing and recreation.

****

SITE CP-2752 (Connor Pond)

Location: On the East Branch of the Swift River near Route 32 in Petersham, Mass.

Petersham, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
732	25	10	7850	12.3

Potential for Expansion: It appears that the surface area could be nearly tripled. If the present dam site was utilized, Route 32 and a house would be affected. If the dam was moved about 1000 feet upstream, no facilities would be affected.

Remarks: The dam is a 105 foot long concrete drop structure with 4-foot high flashboards to control water level. Concrete in the right abutment is cracking.

Ownership and Use: The site is owned by the Swift River Valley Trust and is used primarily for recreation.

SITE CP-2753 (Gaston Pond)

Location: On Rutland Brook at Mill Road in Barre, Mass.

Petersham, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1066	15	13	450	0.7

Potential for Expansion: The relatively small drainage area limits the potential for expansion.

Remarks: The dam is a part of the Mill Road highway embankment. It is 200 feet long with a 28 foot top width. The dam has stone facing on the upstream side. The spillway is a round crested concrete weir, 10 feet long and 3.5 feet deep. Both slopes of the dam have trees and brush growing on them.

Ownership and Use: The site is owned by the Blessed Sacrament Seminary in Barre and is used primarily for recreation.

SITE CP-2754 (Quabbin Reservoir)

Location: On the Swift River near Route 9 in Belchertown, Mass.

Winsor Dam, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
524	24,705	170	119,000	185.9

Potential for Expansion: The site appears to be developed to its potential.

Remarks: Winsor Dam is a 2640 foot long earth-fill structure with a 35 foot top width. The upstream slope is rip-rapped; the downstream slope is grassed. Water is delivered to communities by means of the Quabbin Aqueduct. The total storage capacity of the Quabbin Reservoir is 1,265,000 acre-feet. Goodnough Dike, a 2140 foot long earth-fill dam located to the east of Winsor Dam is used to maintain the reservoir level. Both structures are well maintained.

Ownership and Use: The site is owned by the Metropolitan District Commission and is used as a water supply reservoir and for regulated fishing.

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-QUABBIN RESERVOIR

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV +TYPE (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2710 DA= 0.50 SQ MI = 320 AC USGS QUAD-ATHOL LATITUDE 42-32-22 LONGITUDE 72-10-00																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.20 IN, PEAK FLOW = 153 CFS																
1103.4	0	0.0		4		1.4	1110.9 E	111	4.1	820	1113.1	29	1116.3	14	7	*****
1110.6	100	3.8	1300	24	551C	8.7	1113.1 E	170	6.4	760	1115.4	35	1117.9	16	9	0.18
1114.1	194	7.3	870	31	539C	12.1	1116.6 E	285	10.7	600	1118.8	42	1121.4	19	14	0.26
1119.1	383	14.3	630	43	565C	17.2	1121.6 E	502	18.7	480	1123.5	53	1126.5	24	25	0.37
1122.5	541	20.2	560	51	595C	20.5	1125.0 E	679	25.5	450	1126.4	60	1129.3	27	36	0.43
SITE-CP-2711 DA= 0.78 SQ MI = 499 AC USGS QUAD-ATHOL LATITUDE 42-32-36 LONGITUDE 72-09-15																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.20 IN, PEAK FLOW = 238 CFS																
966.0	0	0.0		3		3.0	982.0 E	173	4.1	1280	984.4	21	987.5	25	34	*****
977.8	100	2.4	2200	13	1686C	14.7	980.3 E	141	3.4	1560	982.6	19	984.3	21	24	0.21
985.8	242	5.8	1440	23	1496C	22.7	988.3 E	311	7.5	1120	990.8	30	992.6	30	54	0.36
995.3	526	12.6	1070	37	1536C	32.3	997.8 E	628	15.1	900	1000.1	44	1002.9	40	116	0.55
1002.0	810	19.5	910	47	1568C	39.0	1004.5 E	936	22.5	780	1007.0	55	1009.9	47	178	0.66
1002.5	830	19.9	880	48	1544C	39.5	1005.0 E	958	23.0	770	1007.1	56	1009.9	47	177	0.67
SITE-CP-2712 DA= 1.74 SQ MI = 1114 AC USGS QUAD-ATHOL LATITUDE 42-31-56 LONGITUDE 72-08-17																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.20 IN, PEAK FLOW = 378 CFS																
1052.5	0	0.0		10		1.5	1062.0 E	385	4.1	430	1064.4	66	1066.8	16	17	*****
1059.1	205	2.2	1040	52	410C	8.1	1061.6 E	362	3.9	590	1064.0	65	1065.5	15	14	0.43
1069.6	894	9.6	440	75	520C	18.7	1072.1 E	1101	11.8	350	1074.6	82	1076.3	25	49	1.07
1078.1	1582	17.1	370	87	679C	27.2	1080.6 E	1826	19.7	320	1083.1	109	1085.1	34	102	1.41
1082.5	1993	21.5	360	105	682C	31.5	1085.0 E	2285	24.6	310	1087.4	135	1089.9	39	141	1.52

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-QUABBIN RESERVOIR

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2713 DA= 1.09 SQ MI = 698 AC USGS QUAD-ATHOL LATITUDE 42-30-49 LONGITUDE 72-10-15																	
SITE RATING (1) STREAM WATER(B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.20 IN, PEAK FLOW = 333 CFS																	
1017.0	0	0.0		0		0.0	1040.8	E	243	4.1	1280	1043.1	30	1046.4	29	57	*****
1031.5	100	1.7	2550	11	23000	14.5	1034.0	E	138	2.4	1840	1036.5	14	1038.5	21	29	0.24
1044.1	326	5.6	1400	34	13570	27.2	1046.6	E	431	7.3	1060	1049.1	53	1051.4	34	81	0.49
1053.0	777	13.3	830	67	9560	36.0	1055.5	E	962	16.5	670	1057.9	84	1060.8	44	140	0.79
1061.4	1453	25.0	600	95	9190	44.4	1063.9	E	1706	29.4	510	1066.0	107	1069.9	53	220	1.00
SITE-CP-2714 DA= 6.09 SQ MI = 3898 AC USGS QUAD-ATHOL LATITUDE 42-30-45 LONGITUDE 72-09-18																	
SITE RATING (1) STREAM WATER QUALITY (A) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1246 CFS																	
920.3	0	0.0		38		1.2	935.9	E	1348	4.1	350	940.8	187	947.5	29	82	*****
927.0	383	1.2	1010	73	5330	8.1	929.5	E	628	1.9	620	933.9	125	938.3	19	37	1.00
938.3	1672	5.1	440	167	4370	19.2	940.8	E	2163	6.6	340	946.6	214	952.8	34	119	2.59
950.9	4250	13.1	250	235	4590	31.9	953.4	E	4904	15.1	220	958.4	277	964.0	45	227	4.36
960.8	6828	21.0	210	290	4980	41.8	960.8	T	6876	21.2	210	966.0	324	969.9	51	299	5.31
962.5	7347	22.6	210	301	5100	43.5	962.5	T	7395	22.7	210	966.6	328	970.0	51	300	5.41
SITE-CP-2715 DA= 6.59 SQ MI = 4218 AC USGS QUAD-ATHOL LATITUDE 42-30-18 LONGITUDE 72-09-38																	
SITE RATING (1) STREAM WATER QUALITY (A) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1349 CFS																	
913.5	0	0.0		27		3.5	933.8	E	2144	6.1	180	936.1	221	941.4	31	50	*****
918.8	238	0.7	1910	65	6950	8.8	918.8	T	291	0.8	1560	931.6	170	936.5	27	31	0.73
926.9	1015	2.9	510	126	4130	16.9	937.4	E	2916	8.3	180	939.9	263	944.0	34	62	1.97
936.0	2570	7.3	270	220	3210	26.0	942.5	E	4278	12.2	160	945.0	292	948.8	39	90	3.49
942.1	4125	11.7	220	276	3310	32.2	942.1	T	4178	11.8	220	947.1	303	949.8	40	97	4.47
942.5	4194	11.8	220	278	3300	32.5	942.5	T	4247	12.1	220	947.4	304	949.9	40	98	4.51

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-QUABBIN RESERVOIR

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2716 DA= 1.31 SQ MI = 838 AC — USGS QUAD-ATHOL — LATITUDE 42-30-28 LONGITUDE 72-07-43																	
SITE RATING (1) STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 325 CFS																	
1053.6	0	0.0		9		1.6	1062.4	E	290	4.1	800	1064.8	59	1067.3	15	17	*****
1058.3	100	1.4	2490	35	7190	6.3	1060.8	E	214	3.0	1170	1063.3	54	1064.9	13	13	0.25
1062.5	286	4.1	1130	52	6300	10.5	1065.0	E	435	6.1	750	1067.4	67	1069.3	17	23	0.49
1068.6	659	9.3	700	70	6620	16.6	1071.1	E	859	12.3	540	1073.5	98	1075.6	24	48	0.80
1072.5	969	13.8	600	91	6360	20.5	1075.0	E	1229	17.6	470	1077.1	123	1079.8	28	72	0.97
SITE-CP-2717 DA= 8.74 SQ MI = 5594 AC — USGS QUAD-PETERSHAM — LATITUDE 42-29-36 LONGITUDE 72-09-59																	
SITE RATING (1) STREAM WATER QUALITY (A) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1518 CFS																	
849.4	0	0.0		10		6.4	898.0	T	1934	4.1	610	906.5	91	910.0	67	270	*****
871.0	445	1.0	1110	33	15090	28.0	873.5	E	607	1.2	810	875.9	40	879.0	36	57	1.23
889.3	1286	2.8	640	58	14140	46.3	891.8	E	1512	3.2	540	894.1	66	897.1	54	157	2.53
910.6	2969	6.4	560	105	15840	67.6	910.6	T	3039	6.5	550	921.6	213	925.3	82	457	4.23
922.5	4920	10.6	390	222	8670	79.5	922.5	T	4990	10.7	390	927.0	271	929.9	87	525	5.63
SITE-CP-2718 DA= 2.16 SQ MI = 1382 AC — USGS QUAD-PETERSHAM — LATITUDE 42-29-38 LONGITUDE 72-07-50																	
SITE RATING (1) STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 460 CFS																	
1024.4	0	0.0		13		2.4	1035.8	E	478	4.1	550	1038.1	71	1040.3	18	35	*****
1030.3	168	1.5	1540	43	5960	8.3	1032.8	E	306	2.7	850	1035.3	61	1036.6	15	21	0.42
1038.1	620	5.4	700	71	6160	16.2	1040.6	E	824	7.1	530	1043.1	84	1044.6	23	56	0.94
1048.9	1524	13.2	480	97	7440	26.9	1051.4	E	1807	15.7	400	1053.8	129	1055.8	34	136	1.56
1056.3	2428	21.1	420	148	6970	34.3	1058.8	E	2838	24.6	360	1061.1	187	1064.1	42	225	1.89
1059.1	2880	25.0	400	169	6850	37.2	1061.6	E	3360	29.2	350	1064.1	214	1067.6	46	272	1.97

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER SUBWATERSHED-QUABBIN RESERVOIR

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-2719 DA= 5.17 SQ MI = 3309 AC USGS QUAD-PETERSHAM LATITUDE 42-29-09 LONGITUDE 72-08-54																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1022 CFS																
942.0	0	0.0		22		12.0	957.5 E	1395	5.1	530	960.0	136	962.8	33	84	*****
946.5	191	0.7	4510	66	12980	16.5	959.0 E	1572	5.6	550	961.4	148	964.0	34	96	0.58
957.1	1308	4.6	1000	127	10340	27.2	965.6 E	2636	9.6	500	968.1	205	971.0	41	177	2.10
970.4	3542	12.8	550	223	8790	40.4	974.9 E	4651	16.9	420	977.4	267	980.0	50	330	3.67
982.5	6719	24.4	380	300	8420	52.5	985.0 E	7516	27.2	340	987.4	333	989.8	60	564	4.69
SITE-CP-2720 DA= 6.08 SQ MI = 3891 AC USGS QUAD-PETERSHAM LATITUDE 42-28-26 LONGITUDE 72-09-42																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1126 CFS																
772.5	0	0.0		9		7.6	829.5 E	2071	6.4	480	832.0	85	835.6	71	318	*****
784.7	129	0.4	3730	13	37840	19.7	784.7 T	178	0.5	2710	799.5	28	802.4	37	52	0.46
807.5	683	2.0	1380	40	23490	42.5	807.5 T	732	2.3	1290	820.5	65	822.9	58	180	1.50
826.5	1792	5.5	840	76	19790	61.5	826.5 T	1840	5.6	820	839.5	95	842.5	78	417	2.70
842.5	3202	9.8	500	100	15990	77.5	842.5 T	3251	10.0	490	847.9	109	850.0	85	544	3.80
SITE-CP-2721 DA= 3.00 SQ MI = 1920 AC USGS QUAD-PETERSHAM LATITUDE 42-28-04 LONGITUDE 72-09-19																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 761 CFS																
785.0	0	0.0		9		5.0	814.9 E	834	5.1	620	817.4	49	819.9	40	108	*****
792.9	123	0.8	2860	20	17720	12.8	792.9 T	147	0.8	2390	801.8	28	803.9	24	31	0.37
814.0	769	4.8	1070	44	18590	34.0	814.0 T	793	5.0	1040	822.9	57	825.1	45	149	1.23
835.9	2061	12.8	730	72	21050	55.9	846.4 E	2887	18.0	520	848.9	81	851.5	72	515	2.13
859.6	4000	25.0	570	94	24160	79.6	866.1 E	4658	29.0	490	868.5	102	870.9	91	978	2.74

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER SUBWATERSHED-QUABBIN RESERVOIR

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2722 DA= 2.03 SQ MI = 1299 AC USGS QUAD-PETERSHAM LATITUDE 42-28-07 LONGITUDE 72-08-07																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 569 CFS																
930.5	0	0.0		5		5.6	956.5 E	449	4.1	760	959.0	34	960.9	36	68	*****
941.4	100	0.8	2880	13	21460	16.4	941.4 T	116	1.1	2480	948.3	21	950.0	25	29	0.28
959.8	534	4.9	1080	35	16610	34.8	968.3 E	903	8.3	640	970.6	51	972.5	47	134	0.84
978.1	1403	13.0	600	55	15330	53.1	980.6 E	1560	14.3	540	983.1	61	984.8	60	237	1.45
997.0	2707	25.0	480	88	14700	72.1	999.5 E	2947	27.2	440	1002.0	101	1004.0	79	480	1.85

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

LEGEND

- WATERSHED BOUNDARY
- DRAINAGE AREA ABOVE STRUCTURE
- POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE
- EXISTING POND OR RESERVOIR
- POTENTIAL SITE LOCATED ON LAND OWNED BY THE METROPOLITAN DISTRICT COMMISSION (MDC). NO ADDITIONAL DATA PROVIDED FOR THESE SITES.

LOCATION MAP

2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2730 2731 2732 2733 2734 2736 2737 2738 2739 2740 2741 2751 2752 2753

MATCH TO SHEET 2

MATCH TO SHEET 2

QUABBIN RESERVOIR

POTTAPAUG POND

Source - USGS Quad Sheets
Athol - 1954
Barre - 1969
Petersham - 1969
Templeton - 1970
Ware - 1969

QUABBIN RESERVOIR (CP-27)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET 1 of 2

USDA-SCS-HYATTSVILLE, MD. 1973

LEGEND

WATERSHED BOUNDARY

POTENTIAL SITE LOCATED ON LAND OWNED BY METROPOLITAN DISTRICT COMMISSION (MDC). NO ADDITIONAL DATA PROVIDED FOR THESE SITES.

EXISTING POND OR RESERVOIR

Source - USGS Quad Sheets
Belchertown - 1964
Millers Falls - 1961
Orange - 1961
Quabbin Reservoir - 1967
Shutesbury - 1964
Winsor Dam - 1967

QUABBIN RESERVOIR (CP-27)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET 2 of 2

USDA-SCS-HYATTSVILLE, MD. 1973

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-28, Swift River

This subwatershed covers about 29,300 acres in the Towns of Ludlow, Palmer, and Wilbraham (Hampden County) and Belchertown, Granby, Pelham and Ware (Hampshire County). There is a U.S. Geological Survey Stream gaging station on the Swift River at West Ware.

The Swift River flows southerly from Quabbin Reservoir along the Belchertown-Ware and Belchertown-Palmer town boundaries to its confluence with the Ware River. The Ware and Chicopee Rivers flow westerly through the southern tip of the subwatershed. Jabish Brook, the principal tributary to the Swift River originates in Pelham and flows southerly to the Swift River in Belchertown. Elevations range from a high of about 1240 feet in Pelham to about 270 feet in Ludlow. Geology of the subwatershed is characterized by granitic bedrock overlain by 10 to 50 feet of glacial till or outwash sand and gravel.

Twelve potential reservoir sites and six existing reservoirs were studied.

****

SITE CP-2801

Location: On an unnamed brook about 3200 feet upstream from Knights Pond in Pelham, Mass.

Belchertown, Mass. USGS quadrangle

Latitude: 42°21'42" Longitude: 72°24'17"

Facilities Affected: None below elevation 1040.

Geologic Conditions: Both abutments are englacial drift or glacial till underlain by granitic bedrock. The bedrock is moderately fractured in outcrops. There are bedrock outcrops in the east brook and bedrock is estimated to be from 10 to 15 feet deep in the west brook. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. If the site is developed to elevation 1035, two dikes will be needed south of the reservoir. There is evidence of an old breached dam at the site.

Public Ownership: The majority of the reservoir site lies within the Caldwell Memorial Forest.

****

SITE CP-2802

Location: On Jabish Brook about 6400 feet downstream from Knights Pond in Belchertown, Mass.

Belchertown, Mass. USGS quadrangle

Latitude: 42°20'10" Longitude: 72°24'01"

Facilities Affected:

Facility	Elevation
2 houses, barn, cabin	930
Knights Pond	928
House	925
Cemetary	920
Knight Street	918
Cabin	918
Cabin and garage	915
Route 202	908
Utility poles	908

Geologic Conditions: The right abutment is glacial till and outwash sand and gravel. The left abutment is glacial till underlain by granitic bedrock. Depth to bedrock in the foundation is estimated to be from 5 to 15 feet. Waterholding capabilities appear to be fair. Leakage is expected through the outwash sand and gravel on the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the right abutment.

Public Ownership: The right abutment of the dam and a portion of the drainage area lies within land owned by the City of Springfield-Water Department.

****

SITE CP-2803

Location: On an unnamed brook about 2200 feet upstream from Sargent Street in Belchertown, Mass.

Belchertown, Mass. USGS quadrangle

Latitude: 42°17'33" Longitude: 72°23'42"

Facilities Affected: None below elevation 580.

SITE CP-2803 (Cont'd)

Geologic Conditions: Both abutments are thing glacial till underlain by granitic bedrock. The foundation area is about 60% covered with boulders. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-2804

Location: On Higher Brook about 7000 feet upstream from Springfield Reservoir in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°12'29" Longitude: 72°26'55"

Facilities Affected:

Facility	Elevation
Power transmission towers	425

Geologic Conditions: Both abutments are glacial till. The foundation is about 15% covered with boulders. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. The drainage area is controlled by the Springfield Water Department and flow is diverted into Springfield Reservoir.

Public Ownership: The pool floods property owned by the Springfield Water Department above elevation 450.

****

SITE CP-2805

Location: On Roaring Brook about 700 feet upstream from Turkey Hill Road in Belchertown, Mass.

Ludlow, Mass. USGS quadrangle.

Latitude: 42°14'01" Longitude: 72°24'25"

Facilities Affected:

Facility	Elevation
Springfield Reservoir Road	395
Utility poles	395
Booth Road	395

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 40 to 45 feet. Waterholding capabilities appear to be poor. Leakage is expected through the sand and gravel on both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

Public Ownership: The pool floods property owned by the Springfield Water Department above elevation 395.

****

SITE CP-2806

Location: On Broad Brook about 4500 feet upstream from Zitka Road in Belchertown, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°14'32" Longitude: 72°23'56"

Facilities Affected: None below elevation 400.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 45 to 55 feet. Waterholding capabilities appear to be poor. Leakage is expected through the sand and gravel in both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location. The drainage area is controlled by the Springfield Water Department and water is diverted into Springfield Reservoir.

****

SITE CP-2807

Location: On Jabish Brook about 3200 feet upstream from Mill Valley Road in Belchertown, Mass.

Belchertown, Mass. USGS quadrangle

Latitude: 42°16'21" Longitude: 72°23'00"

Facilities Affected:

Facility	Elevation
Building	445
Shop	440
2 houses, 2 barns	440
Belchertown Water Works	440
High tension towers	440
House	435
Route 202	434
3 houses	430
Jensen Road	425
State School Water Works	425

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. The foundation is a swamp with water impounded at various elevations. Depth to bedrock in the foundation is estimated to be from 40 to 50 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-2808

Location: On Jabish Brook about 5100 feet downstream from Mill Valley Road in Belchertown, Mass.

Belchertown, Mass. USGS quadrangle

Latitude: 42°15'07" Longitude: 72°22'43"

Facilities Affected: None below elevation 400.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. The foundation is swamp deposits. Depth to bedrock in the foundation is estimated to be from 45 to 55 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

SITE CP-2808 (Cont'd)

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed as an emergency spillway. The drainage area is controlled by the Springfield Water Department and water is diverted into Springfield Reservoir.

Public Ownership: A small piece of land owned by the Springfield Water Department would be flooded above elevation 385.

****

SITE CP-2809

Location: On an unnamed brook about 4000 feet upstream from Mill Valley Road and about 1200 feet northwest of Sabin Street in Belchertown, Mass.

Windsor Dam, Mass. USGS quadrangle

Latitude: 42°16'01" Longitude: 72°22'00"

Facilities Affected: None below elevation 520.

Geologic Conditions: The left abutment is poorly graded sand and gravel, shallow to bedrock, with bedrock outcrops at higher elevations. The right abutment is poorly graded sand and gravel, shallow to bedrock. The foundation is gravel. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be fair to poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel in both abutments and the foundation.

****

SITE CP-2810

Location: On an unnamed brook about 1600 feet upstream from West Street and about 1100 feet upstream from the Central Vermont Railroad in Belchertown, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°12'44" Longitude: 72°22'10"

Facilities Affected: None below elevation 370.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-2811

Location: On Jabish Brook about 3300 feet upstream from Bardwell Road in Belchertown, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°13'22" Longitude: 72°22'10"

Facilties Affected: None below elevation 360.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-2812

Location:	On an unnamed brook about 1500 feet upstream from Bondsville Road in Belchertown, Mass. Palmer, Mass. USGS quadrangle Latitude: 42°13'50" Longitude: 72°21'27"
Facilities Affected:	None below elevation 425.
Geologic Conditions:	Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.
Engineering Notes	The left abutment is recommended for the emergency spillway location.

****

SITE CP-2813 (Knights Pond)

Location: On Jabish Brook at Gold Street in Belchertown, Mass.

Belchertown, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
928	35	17	1050	1.6

Potential for Expansion: Expansion does not appear to be feasible; a 2500 foot long dam would be required to double the existing surface area.

Remarks: The dam is an earth-fill structure. The spillway is a rock masonry weir, 31 feet long and 3 feet deep. The upstream wingwalls are concrete with stone masonry walls on the downstream side. Concrete in the left wingwall is spalling.

Ownership and Use: The site is owned by the City of Springfield and is used as a water supply reservoir.

SITE CP-2814 (Springfield Reservoir)

Location: On an unnamed brook near the intersection of Belchertown Street and Route 21 in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
379	390	15	12,800	20.0

Potential for Expansion: Limited. Expansion would require extensive diking and modification of the Broad Brook - Jabish Brook Canal system.

Remarks: The Springfield Reservoir complex is a series of three reservoirs; one main reservoir and two smaller pools. Three of the dams which maintain the reservoirs are vegetated earth-fill structures with riprap on the upstream slopes. The dams are known as Gatehouse Dam and Basin Dams #1 and #2. Each dam has a gated outlet. A second control on the main reservoir is the Cherry Valley Dam, a concrete ogee weir structure. Concrete at the toe of the structure is spalling.

Ownership and Use: The site is owned by the City of Springfield and is used as a water supply reservoir.

SITE CP-2815 (Jabish Canal)

Location: On the Jabish Canal near Route 181 in Belchertown, Mass.

Belchertown, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
415	10	9	6950	10.9

Potential for Expansion: It appears unlikely that the site would be expanded. The site serves as a diversion to Springfield Reservoir and not as a reservoir.

Remarks: The pond is contained by two dams. The Blackman-Walker Dam is a 100 foot long concrete weir structure located on the natural stream. The Springfield Water Department Canal Dam is a 36 foot long stone masonry structure which outlets into Jabish Canal through a 4-foot wide, 5-foot high gated opening. The dam and pond were constructed to divert flows to the Springfield Reservoir (Site CP-2814).

Ownership and Use: The site is owned by the City of Springfield and is used as a water supply diversion.

SITE CP-2816
(Ludlow Manufacturing Associates Dam)

Location: On the Chicopee River near Red Bridge Road in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams)		40	433,300	677.0

Potential for Expansion: Steep topography limits any significant increase in surface area.

Remarks: The dam is an 800 foot long earth-fill structure with a 6 foot top width. The spillway is a 150 foot long concrete ogee weir section. A gate house at the left abutment releases flow under the Red Bridge. The upstream and downstream slopes of the dam have light brush growing on them. Concrete in the spillway is spalling in places.

Ownership and Use: The site is owned by the Western Mass. Electric Co. and is used for power generation.

SITE CP-2817
(Bondsville Lower Dam)

Location: On the Swift River near State Street in Bondsville, Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	(Sq. Mi.)
(Elevation and area were not determined for river dams)		14	123,800*	193.4

*119,000 acres are controlled by Quabbin Reservoir

Potential for Expansion: Limited by houses on both banks. Storage could be increased by dredging of accumulated silt.

Remarks: The dam is a 125 foot long stone masonry drop structure with a weir depth of 4 feet. There is a 4 foot wide, 5 foot high, control gate on the right abutment. The pool appears to be about 80% filled with silt.

Ownership and Use: The site is owned by the Bondsville Realty Company and is used for industrial purposes.

SITE CP-2818
(Bondsville Upper Dam)

Location: On the Swift River near River Road in Bondsville, Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams)		15	123,600*	193.1

*119,000 acres are controlled by Quabbin Reservoir

Potential for Expansion: This is a very narrow dam site with steep abutments on both sides. Expansion of the pool would be limited by the effects on the Chicopee Valley Aqueduct, the new State Fish Hatchery, Route 9, and the outlet from Quabbin Reservoir.

Remarks: The dam is a stone masonry structure with 18" high flashboards to control the water level. There is a canal and control gate on the left abutment. The pool contains a great deal of silt. There are several leaks through the flashboards.

Ownership and Use: The site is owned by the Bondsville Realty Company and is used for industrial purposes.

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-SWIFT RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2801 DA= 0.92 SQ MI = 589 AC USGS QUAD-BELCHERTOWN LATITUDE 42-21-43 LONGITUDE 72-24-17																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 278 CFS																
1012.0	0	0.0		2		12.1	1029.4 E	204	4.1	990	1031.8	41	1034.4	34	26	*****
1025.8	100	2.0	2180	21	10330	25.7	1028.3 E	169	3.5	1280	1030.6	36	1032.3	32	22	0.21
1028.1	156	3.2	1590	28	8970	28.0	1030.6 E	244	5.0	1010	1033.0	46	1034.6	35	27	0.29
1030.0	212	4.3	1320	33	8510	30.0	1032.5 E	321	6.5	870	1035.0	55	1037.0	37	33	0.36
1032.5	315	6.4	1060	44	7550	32.5	1035.0 E	445	9.1	750	1037.4	66	1039.6	40	43	0.45
SITE-CP-2802 DA= 2.99 SQ MI = 1914 AC USGS QUAD-BELCHERTOWN LATITUDE 42-20-10 LONGITUDE 72-24-01																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 806 CFS																
900.5	0	0.0		7		10.5	913.1 E	662	4.1	450	915.6	122	918.4	28	31	*****
905.0	100	0.6	3350	37	9070	15.0	913.5 E	695	4.4	480	915.9	124	918.4	28	31	0.31
914.0	722	4.5	670	107	4520	24.0	916.5 E	1040	6.5	460	919.0	152	921.0	31	40	1.19
922.4	1966	12.3	440	195	4420	32.4	924.9 E	2514	15.7	340	927.3	264	930.8	41	84	2.08
925.3	2589	16.2	390	236	4280	35.3	927.8 E	3243	20.2	310	929.9	300	934.0	44	103	2.37
SITE-CP-2803 DA= 0.49 SQ MI = 314 AC USGS QUAD-BELCHERTOWN LATITUDE 42-17-33 LONGITUDE 72-23-42																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 146 CFS																
550.0	0	0.0		1		8.1	562.0 E	108	4.1	1780	564.3	17	567.0	25	26	*****
561.8	100	3.8	2360	15	15410	19.7	564.3 E	145	5.6	1620	566.7	19	568.5	26	30	0.18
564.5	146	5.6	1870	18	15520	22.6	567.0 E	196	7.5	1390	569.4	22	571.0	29	38	0.21
569.3	237	9.1	1450	21	16030	27.2	571.8 E	297	11.3	1160	574.0	25	576.0	34	56	0.29
572.5	310	11.8	1300	24	16810	30.5	575.0 E	377	14.3	1070	577.4	28	579.7	38	72	0.33

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-SWIFT RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2804 DA= 1.36 SQ MI = 870 AC USGS QUAD-LUDLOW LATITUDE 42-12-29 LONGITUDE 72-26-55																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 405 CFS																	
425.7	0	0.0		4		5.6	445.5	E	301	4.1	1840	448.0	28	450.7	31	98	*****
436.7	100	1.4	5690	16	3470C	16.7	445.2	E	294	4.0	1940	447.7	27	449.5	30	90	0.25
444.9	273	3.8	2700	25	2929C	24.9	451.4	E	469	6.5	1570	453.9	39	455.7	36	139	0.48
455.5	619	8.5	1540	44	2177C	35.5	458.0	E	747	10.3	1270	460.5	56	462.4	42	204	0.79
462.2	965	13.2	1230	60	1987C	42.2	464.7	E	1130	15.6	1050	467.2	70	469.4	49	291	0.98
462.5	981	13.5	1220	60	1983C	42.5	465.0	E	1148	15.7	1040	467.5	71	469.7	50	294	0.99
SITE-CP-2805 DA= 2.64 SQ MI = 1690 AC USGS QUAD-LUDLOW LATITUDE 42-14-01 LONGITUDE 72-24-25																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 787 CFS																	
383.7	0	0.0		19		1.7	392.6	E	584	4.1	430	395.1	119	398.0	16	33	*****
386.7	100	0.7	2810	50	568C	4.6	393.2	E	646	4.6	440	395.7	123	398.5	16	35	0.30
388.7	221	1.6	1500	71	469C	6.6	395.2	E	873	6.1	380	397.2	134	400.0	18	43	0.54
390.2	343	2.4	1000	86	396C	8.3	394.7	E	823	5.8	420	397.2	134	399.9	18	43	0.71
392.5	552	3.9	820	101	444C	10.5	392.5	T	573	4.1	790	397.5	135	399.7	18	42	0.97
SITE-CP-2806 DA= 2.74 SQ MI = 1754 AC USGS QUAD-LUDLOW LATITUDE 42-14-32 LONGITUDE 72-23-56																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 817 CFS																	
375.2	0	0.0		21		1.2	382.4	E	606	4.1	390	384.7	139	387.7	14	19	*****
377.5	100	0.7	2660	64	415C	3.5	382.0	E	562	3.8	470	384.5	136	387.0	13	17	0.31
381.9	527	3.5	670	121	2940	7.8	384.4	E	872	6.0	410	386.9	151	389.2	15	24	0.95
388.0	1382	9.5	380	158	3310	14.0	390.5	E	1818	12.3	290	392.9	195	395.5	21	52	1.67
392.5	2157	14.7	310	191	3440	18.5	395.0	E	2685	18.4	250	397.2	232	399.9	26	83	2.09

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER SUBWATERSHED-SWIFT RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2807 DA= 10.25 SQ MI = 6560 AC USGS QUAD-BELCHERTOWN LATITUDE 42-16-21 LONGITUDE 72-23-00																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1861 CFS																	
422.5	0	0.0		33		4.5	444.0	T	2269	4.1	530	447.4	184	450.0	32	116	*****
424.9	100	0.2	7960	48	16630	6.8	424.9	T	182	0.3	4370	435.9	119	439.2	21	53	0.41
430.5	473	0.8	2110	83	11990	12.6	430.5	T	555	1.0	1800	441.5	154	445.5	28	87	1.36
437.5	1219	2.2	930	130	8710	19.6	437.5	T	1301	2.4	870	446.4	178	449.7	32	115	2.62
442.5	1926	3.5	620	159	7590	24.5	442.5	T	2008	3.6	600	447.7	185	450.0	32	116	3.49
SITE-CP-2808 DA= 14.04 SQ MI = 8986 AC USGS QUAD-BELCHERTOWN LATITUDE 42-15-07 LONGITUDE 72-22-43																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 2254 CFS																	
386.7	100	0.1	3800	47	8030	8.8	386.7	T	212	0.3	1790	395.5	83	399.9	22	25	0.43
388.6	190	0.3	1990	57	6700	10.6	388.6	T	302	0.4	1250	395.5	83	399.1	21	22	0.73
390.1	280	0.4	1460	65	6330	12.1	390.1	T	393	0.5	1040	396.5	86	399.9	22	25	1.00
392.5	448	0.6	1000	73	6120	14.5	392.5	T	560	0.7	800	397.1	88	400.0	22	25	1.41
SITE-CP-2809 DA= 1.18 SQ MI = 755 AC USGS QUAD-WINDSOR DAM LATITUDE 42-16-01 LONGITUDE 72-22-00																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 352 CFS																	
494.2	0	0.0		7		2.2	504.7	E	261	4.1	770	507.0	48	509.9	18	23	*****
500.2	100	1.6	1990	26	7520	8.2	502.7	E	187	3.0	1070	505.0	42	507.0	15	13	0.24
504.0	224	3.5	1250	39	7260	12.0	506.5	E	340	5.4	820	508.9	54	511.0	19	28	0.40
509.2	471	7.5	890	55	7540	17.2	511.7	E	629	10.0	660	514.2	71	516.7	25	56	0.62
512.5	667	10.6	770	66	7870	20.5	515.0	E	851	13.5	610	517.4	81	519.9	28	80	0.75

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(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-SWIFT RIVER

BENEFICIAL POOL						EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-2810	DA= 1.23 SQ MI = 787 AC						USGS QUAD-PALMER					LATITUDE 42-12-44 LONGITUDE 72-22-10					
SITE RATING (3)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.90 IN, PEAK FLOW = 250 CFS					
333.4	0	0.0		4		4.4	352.6	E	272	4.1	850	354.9	28	356.7	28	40	*****
344.2	100	1.5	1990	15	13470	15.2	346.7	E	150	2.3	1330	349.2	20	350.5	22	24	0.25
349.7	199	3.0	1310	21	12470	20.7	352.2	E	266	4.0	980	354.7	28	356.1	27	38	0.37
357.2	396	6.0	990	32	12330	28.2	359.7	E	490	7.5	800	362.2	40	363.6	35	71	0.58
362.5	585	8.8	890	41	12690	33.5	365.0	E	702	10.7	740	367.5	51	369.1	40	108	0.73
SITE-CP-2811	DA= 16.60 SQ MI = 10624 AC						USGS QUAD-PALMER					LATITUDE 42-13-22 LONGITUDE 72-22-10					
SITE RATING (3)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.90 IN, PEAK FLOW = 2163 CFS					
346.4	100	0.1	3150	46	6900	11.3	348.9	E	363	0.4	870	351.2	74	354.5	20	14	0.45
348.4	202	0.2	1700	56	6190	13.3	350.9	E	492	0.6	700	353.2	88	356.2	21	18	0.80
350.1	303	0.3	1220	64	5790	15.1	352.6	E	623	0.7	600	355.1	102	358.1	23	22	1.10
352.5	480	0.5	1120	82	6540	17.5	352.5	T	613	0.7	880	357.0	116	360.0	25	27	1.55
SITE-CP-2812	DA= 0.50 SQ MI = 320 AC						USGS QUAD-PALMER					LATITUDE 42-13-50 LONGITUDE 72-21-27					
SITE RATING (3)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.90 IN, PEAK FLOW = 147 CFS					
408.1	0	0.0		2		4.1	416.7	E	111	4.1	1040	419.0	34	421.7	18	12	*****
413.0	30	1.1	3960	13	8980	9.0	415.5	E	78	2.9	1530	417.9	30	420.0	16	9	0.08
414.7	59	2.2	2380	20	7250	10.8	417.2	E	123	4.6	1150	419.5	36	422.0	18	12	0.13
416.2	89	3.3	1680	24	6140	12.2	418.7	E	165	6.1	900	420.0	38	421.2	17	11	0.16
417.5	124	4.6	2190	29	9420	13.5	417.5	T	128	4.8	2120	420.0	38	425.4	21	21	0.20

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2802

2801

2813

2803

2806

2805

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2816

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2817

2818

LEGEND

WATERSHED BOUNDARY

DRAINAGE AREA ABOVE STRUCTURE

POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE

EXISTING POND OR RESERVOIR

Source - USGS Quad Sheets
Belchertown - 1964
Ludlow - 1969
Palmer - 1969
Windsor Dam - 1967

SWIFT RIVER(CP-28)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

USDA-SCS-HYATTSVILLE, MD. 1973

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-29, Ware River

This subwatershed covers about 98,600 acres in the Towns of Barre, Hardwick, Hubbardston, New Braintree, Oakham, Petersham, Phillipston, Princeton, Rutland, Templeton, West Brookfield, and Westminster (all in Worcester County). There is a U.S. Geological Survey stream gaging station on the Ware River at Barre Falls in Barre. The watershed above Shaft 8 on Route 122 in Barre is subject to the Metropolitan District Commission's right to divert flows to Quabbin Reservoir. About 20,000 acres of the watershed is owned by the MDC. The MDC ownership and statutory obligation to maintain water quality will influence the development of potential sites within this Study Area.

The Ware River originates in Hubbardston (West Branch) and Westminster (East Branch) and flows generally southwesterly through Rutland, Barre, New Braintree and Hardwick. The major tributary to the Ware River is Burnshirt River, which originates in Phillipston and flows southerly through Hubbardston to the Ware River in Barre. Elevations range from a high of about 1720 in Wachusett Mountain State Reservation to a low of about 540 in Gilbertville (New Braintree). Geology of the subwatershed is characterized as gneiss, schist or granite bedrock overlain by 15 to 35 feet of glacial till or outwash sand and gravel.

Thirty-four potential reservoir sites and sixteen existing reservoirs were studied. Summary Data for Potential Upstream Reservoir Sites are included for thirty-three sites that met study criteria.

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SITE CP-2901

Location:	On an unnamed brook about 75 feet upstream of Riley Switch Road in Phillipston, Mass. Templeton, Mass. USGS quadrangle Latitude: 42°33'06" Longitude: 72°06'39"
Facilities Affected:	None below elevation 1050.
Geologic Conditions:	Both abutments are thin glacial till with outcrops of granitic bedrock. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located about 2½ miles from the site.
Engineering Notes:	The left abutment is recommended for the emergency spillway location.

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SITE CP-2902

Location: On an unnamed brook at Templeton Road in Phillipston, Mass.

Templeton, Mass. USGS quadrangle

Latitude: 42°32'07" Longitude: 72°05'54"

Facilities Affected:

Facility	Elevation
Burnshirt Road	1005
Williamsville Road	1000
Templeton Road	980

Geologic Conditions: Both abutments are thin glacial till underlain by granitic bedrock. The bedrock is slightly fractured in outcrops. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. If the site is developed to elevation 1010, a dike will be required north of the reservoir. There is an old rock and earth fill dam at the site. It may be possible to locate the dam upstream of Templeton Road.

****

SITE CP-2903

Location: On the Burnshirt River about 300 feet downstream from the Penn-Central Railroad in Phillipston and Templeton, Mass.

Templeton, Mass. USGS quadrangle

Latitude: 42°30'43" Longitude: 72°05'09"

Facilities Affected:

Facility	Elevation
4 sheds	885
Building	880
Cabin	872
Unimproved road	870
Penn Central Railroad	860

Geologic Conditions: Both abutments are outwash sand and gravel. There are geanitic bedrock outcrops in the foundation. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. A dike will be required north of the reservoir. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the abutments.

****

SITE CP-2904

Location: On Canesto Brook about 100 feet upstream of South Road in Templeton, Mass.

Templeton, Mass. USGS quadrangle

Latitude: 42°30'51" Longitude: 72°03'54"

Facilities Affected:

Facility	Elevation
South Road	1075
Utility poles	1075

Geologic Conditions: Both abutments are thin englacial drift underlain by granitic bedrock. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be fair. Leakage is expected through the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: The emergency spillway should be located on the abutment requiring the lesser amount of rock excavation. Waterholding capabilities might be improved by a cutoff to bedrock.

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SITE CP-2905

Location: On Canesto Brook about 4700 feet downstream from South Road in Hubbardston, Mass.

Templeton, Mass. USGS quadrangle

Latitude: 42°30'15" Longitude: 72°03'20"

Facilities Affected: None below elevation 1060.

Geologic Conditions: Both abutments are thin discontinuous glacial till underlain by granitic bedrock. Both abutments may have gravel terraces near the brook. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be fair to good. Leakage might occur through the gravel terraces. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the gravel on both abutments.

Public Ownership: A portion of the pool area is in the Hubbardston State Forest.

****

SITE CP-2906

Location: On Joslin Brook about 300 feet downstream from Lovewell Pond in Hubbardston, Mass.

Gardner, Mass. USGS quadrangle.

Latitude: 42°30'26" Longitude: 71°57'48"

Facilities Affected:

Facility	Elevation
House	1082
Unnamed Road	1080
2 houses	1080

Geologic Conditions: The left abutment is dense glacial till. The right abutment is poorly graded outwash sand and gravel. Depth to bedrock is estimated to be from 5 to 15 feet. Waterholding capabilities appear to be fair. Leakage is expected through the outwash sand and gravel. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. If the site is developed to elevation 1090, a short dike will be required at the south edge of the pool. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the right abutment.

Public Ownership: About 25% of the drainage area is in the Westminster State Forest.

****

SITE CP-2907

Location: On Canesto Brook about 6500 feet upstream from Williamsville Road in Hubbardston, Mass.

Barre, Mass. USGS quadrangle

Latitude: 42°29'26" Longitude: 72°03'15"

Facilities Affected: None below elevation 975.

Geologic Conditions: Both abutments are dense englacial drift with outcrops of granitic bedrock. Bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be fair to good depending on the permeability of the englacial drift. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: Above elevation 915, part of the pool lies within the Hubbardston State Forest.

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SITE CP-2908

Location: On an unnamed brook about 1500 feet downstream from Marcan Pond in Hubbardston, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°28'53" Longitude: 71°59'51"

Facilities Affected:

Facility	Elevation
Cabin	895

Geologic Conditions: The left abutment is outwash sand and gravel underlain by glacial till. The right abutment is dense glacial till. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment and the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-2909

Location: On Mason Brook about 1500 feet downstream from East Simonds Hill Road in Hubbardston, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°28'34" Longitude: 71°59'03"

Facilities Affected:

Facility	Elevation
High tension pole	965
House	965
House	962
Mobile home	960
East Simonds Hill Road	955
Depot Road	955
Utility poles	955

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. If the site is developed to elevation 950, a dike will be required south of the reservoir. There is an old breached dam at this site.

Public Ownership: About ½ square mile of the drainage area is in the Westminster State Forest.

****

SITE CP-2910

Location: On an unnamed tributary to Wachusett Brook about 1900 feet upstream from the confluence and about 4800 feet upstream from Rhodes Road in Princeton, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°28'28" Longitude: 71°54'20"

Facilities Affected:

Facility	Elevation
Thompson Road	1202
Utility poles	1202

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 5 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. A dike will be required south of the reservoir near Thompson Road.

Public Ownership: About one-half of the pool area lies within a wildlife sanctuary and about 20% of the drainage area is within the Wachusett Mountain State Forest.

****

SITE CP-2911

Location: On Canesto Brook at Williamsville Road in Hubbardston, Mass.

Barre, Mass. USGS quadrangle

Latitude: 42°28'23" Longitude: 72°03'07"

Facilities Affected:

Facility	Elevation
Williamsville Road	all

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

Public Ownership: About ½ square mile of the drainage area is in the Hubbardston State Forest.

****

SITE CP-2912

Location: In the wetland area about 100 feet upstream of Skelly Road in Barre, Mass.

Barre, Mass. USGS quadrangle

Latitude: 42°28'19" Longitude: 72°06'37"

Facilities Affected:

Facility	Elevation
Petersham Road	1062
Skelly Road	1055

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-2913

Location: On the Prince River about 1900 feet downstream from Skelly Road in Barre, Mass.

Barre, Mass. USGS quadrangle

Latitude: 42° 27'59" Longitude: 72°06'29"

Facilities Affected:

Facility	Elevation
Skelly Road	1055

Geologic Conditions: Both abutments are thin glacial till with outcrops of granitic bedrock. The bedrock is slightly fractured in outcrops. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. If the site is developed to elevation 1045, a dike will be required northwest of the reservoir.

****

SITE CP-2916

Location: From #7 Schoolhouse Road about 1000 feet upstream on an unnamed brook to confluence of two brooks; then west about 1600 feet upstream on an unnamed brook in Princeton, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°26'29" Longitude: 71°56'37"

Facilities Affected: None below elevation 1060.

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Water-holding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. If the site is developed to elevation 1055, three dikes will be required on the west and south sides of the reservoir.

Public Ownership: The site is within the Phillipston Wildlife Management Area owned by the Massachusetts Division of Fisheries and Game.

****

SITE CP-2918

Location: On Pleasant Brook about 600 feet downstream from Everett Road in Barre, Mass.

Barre, Mass. USGS quadrangle

Latitude: 42°26'01" Longitude: 72°04'28"

Facilities Affected:

Facility	Elevation
Everett Road	835

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: The site is within the Phillipston Wildlife Management Area owned by the Massachusetts Division of Fisheries and Game.

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SITE CP-2920

Location: On Pomagussett Branch about 400 feet upstream from Edson Pond in Rutland, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°24'54" Longitude: 72°57'33"

Facilities Affected:

Facility	Elevation
Route 68	1038
Old Route 68	1035
Utility poles	1035

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-2921

Location: On an unnamed tributary to the East Branch of the Ware River about 4200 feet upstream from Intervale Road and about 2300 feet upstream from the confluence with the East Branch of the Ware River in Rutland, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°24'30" Longitude: 72°58'49"

Facilities Affected: None below elevation 980.

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. If the site is developed to elevation 975, two dikes will be required.

****

SITE CP-2922

Location: On Moose Brook about 900 feet upstream from Old Hardwich Road in Barre, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°24'58" Longitude: 72°08'39"

Facilities Affected:

Facility	Elevation
House	978
West Street	974
Utility poles	974
4 houses	974
Dana Road	972
Utility poles	972

Geologic Conditions: Both abutments are glacial till. Boulders cover about 40% of the abutment area. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. If the site is developed to elevation 990, a dike will be required to the west of the dam. The site was also identified as a potential site (M 13A-5) in the Comprehensive Study of the Connecticut River Basin.

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SITE CP-2924

Location: On Moose Brook about 1300 feet upstream from Hardwick Road in Barre, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°24'03" Longitude: 72°08'48"

Facilities Affected:

Facility	Elevation
West Street	974
Mobile home and garage	965
Old Hardwick Road	958

Geologic Conditions: Both abutments are dense glacial till. The right abutment is about 20% covered with boulders. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-2925

Location: On a tributary to Moose Brook about 500 feet upstream from Hardwick Road in Barre, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°23'33" Longitude: 72°09'49"

Facilities Affected: None below elevation 1030.

Geologic Conditions: Both abutments are dense glacial till with bedrock high on the left abutment. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-2926

Location: On an unnamed tributary to Pine Hill Brook about 25 feet upstream of Cutler Road in Barre, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°23'31" Longitude: 72°07'43"

Facilities Affected:

Facility	Elevation
Cutler Road	830

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. If the site is developed to elevation 835, a dike will be required.

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SITE CP-2927

Location: On Mill Brook about 2600 feet downstream from the Central New England Sanatorium Road in Rutland, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°22'43" Longitude: 72°58'14"

Facilities Affected:

Facility	Elevation
Barn	980

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. There is a concrete weir about 300 feet upstream from the site which impounds water for improving wildlife habitat.

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SITE CP-2928

Location: On Moose Brook about 600 feet upstream from Taylor Hill Road in Hardwick, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°22'41" Longitude: 72°09'42"

Facilities Affected:

Facility	Elevation
Taylor Hill Road	850
Quabbin Aqueduct	795

Geologic Conditions: The left abutment is dense glacial till. The right abutment is thin glacial till underlain by gneiss bedrock. The bedrock is slightly jointed in outcrops. There are gneiss bedrock outcrops in the stream. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

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SITE CP-2929

Location: On Bell Brook about 2200 feet upstream from Woods Road in Barre, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°22'04" Longitude: 72°05'55"

Facilities Affected:

Facility	Elevation
House	765
Crocker Nye Road	762
Old Turnpike Road	755
Utility poles	755

Geologic Conditions: Both abutments are outwash sand and gravel. There are gravel pits on both abutments. Depth to bedrock in the foundation is estimated to be from 25 to 35 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

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SITE CP-2930

Location: On Burrow Brook about 150 feet upstream from Old Turnpike Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°21'56" Longitude: 72°04'21"

Facilities Affected:

Facility	Elevation
Barre Road	935
Utility poles	935
House	928
House and barn	925

Geologic Conditions: The left abutment is outwash sand and gravel. The right abutment is dense glacial till. Depth to bedrock in the foundation is estimated to be from 30 to 35 feet. Waterholding capabilities appear to be fair to poor. Leakage is expected through the left abutment. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-2932

Location: On an unnamed brook about 1600 feet upstream from Demond Pond near Turkey Hill Road in Rutland, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°21'12" Longitude: 72°57'40"

Facilities Affected:

Facility	Elevation
House and garage	1022
Utility poles	995

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Pervious material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location. If the site is developed to elevation 1015, a natural saddle on the left abutment will require a dike or might be used as an emergency spillway.

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SITE CP-2933

Location: On an unnamed tributary to Bell Brook about 2300 feet upstream from Crocker Nye Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°21'07" Longitude: 72°05'48"

Facilities Affected:

Facility	Elevation
Crocker Nye Road	875

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 35 to 40 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location. There is a small pond at the site.

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SITE CP-2934

Location: On Bell Brook at Scott Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°21'18" Longitude: 72°05'13"

Facilities Affected:

Facility	Elevation
House and barn	890
Trailer	885
Barn	880
Scott Road	872
Utility poles	872

Geologic Conditions: Both abutments are outwash sand and gravel; mostly fine sand to elevation 890. Depth to bedrock in the foundation is estimated to be from 35 to 40 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-2935

Location: On Winimusset Brook at Hardwick Road in New Braintree, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°20'32" Longitude: 72°08'44"

Facilities Affected:

Facility	Elevation
Cemetery	595
Barn	595
Barn	585
Ravine Road	582
Silo	580
Garage	580
Slein Road	568
Utility poles	568
Hardwick Road	562
Utility poles	562

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 35 to 45 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

Public Ownership: The reservoir would inundate part of the Winimusset Meadows Wildlife Management Area.

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SITE CP-2936

Location: On Bell Brook about 900 feet upstream from Gaffeney Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°20'41" Longitude: 72°05'01"

Facilities Affected: None below elevation 950.

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-2937

Location: On Winimusset Brook about 100 feet upstream of Slein Road in New Braintree, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°19'49" Longitude: 72°08'45"

Facilities Affected:

Facility	Elevation
Barn	600
Wine Road and utility poles	595

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 35 to 45 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-2938

Location: On Winimusset Brook about 700 feet upstream from Wine Road in New Braintree, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°19'09" Longitude: 72°08'55"

Facilities Affected: None below elevation 680.

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 25 to 35 feet. Water-holding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-2939

Location: On an unnamed brook about 400 feet upstream from No.7-Schoolhouse Road in Princeton, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Latitude: 42°26'44" Longitude: 71°56'22"

Facilities Affected: None below elevation 1040.

Geologic Conditions: Both abutments are dense glacial till. Depth to bedrock is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-2940

Location: On Moose Brook about 250 feet upstream from Brook Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°21'21" Longitude: 72°09'42"

Facilities Affected:

Facility	Elevation
House	680
Brook Road	660

Geologic Conditions: The left abutment is outwash sand and gravel at the toe of the slope and dense glacial till about midway up the slope. The right abutment is glacial till underlain by gneiss bedrock. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through the sand and gravel on the left abutment. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

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SITE CP-2906 (Lovewell Pond)

Location: On Joslin Brook near Grimes Road in Hubbardston, Mass.

Gardner, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1076	85	13	1300	2.0

Potential for Expansion: The surface area could be more than doubled before excessive diking would be required. The relatively small drainage area limits the potential for expansion.

Remarks: The dam is a 110 foot long rock and earth-fill structure with a 9 foot top width. The downstream slope is vertical; the upstream is riprapped on a 1½:1 slope. The principal spillway is a 21 foot long weir with flashboards. There is some seepage through flashboards.

Ownership and Use: The site is owned by Mr. Streeter and is used primarily for recreation.

SITE CP-2941 (Queen Lake)

Location: On an unnamed brook near the intersection of Barre and Riley Switch Roads in Phillipston, Mass.

Templeton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1128	135	10	375	0.6

Potential for Expansion: Expansion does not appear to be feasible; houses and camps line the shore. The very small drainage area severely limits expansion.

Remarks: The dam is an 85 foot long earth-fill structure with a 20 foot top width. The spillway is a box inlet drop structure, 3 feet by 6 feet, emptying into a 1 foot by 2.5 foot monolithic conduit. The downstream slope has light brush and large trees growing on it.

Ownership and Use: This is an enlarged great pond open to public use.

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SITE CP-2943 (Waite Pond)

Location: On an unnamed brook near High Bridge Road in Hubbardston, Mass.

Gardner, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1025	35	5	700	1.1

Potential for Expansion: The surface area could be doubled; a 2000 foot long dam would be required.

Remarks: The dam is a 450 foot long earth-fill structure with a 6 foot top width. The downstream slope is nearly vertical and is riprapped. The upstream slope is about 2:1. The spillway is a 7 foot long concrete weir with flashboards.

Ownership and Use; The site is owned by the Metropolitan District Commission and is used for watershed protection and fishing.

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SITE CP-2944
(Noyes Pond)

Location: On an unnamed brook near Davis Road in Westminster, Mass.

Gardner, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1165	40	15	400	0.6

Potential for Expansion: The relatively small drainage area limits the potential for expansion.

Remarks: The dam is a 130 foot long earth-fill structure with a 10 foot top width. The upstream slope is faced with concrete and rock riprap. A beach area is located on top of the dam. The principal spillway is a 10 foot long concrete weir. There is a 24-inch pond drain. There is a crack in the principal spillway concrete.

Ownership and Use: The site is owned by Mr. Whitney and is used primarily for recreation. Water rights are owned by the City of Fitchburg.

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SITE CP-2945
(Mare Meadow Reservoir)

Location: On a tributary to the Ware River near Westminster Road in Hubbardston, Mass.

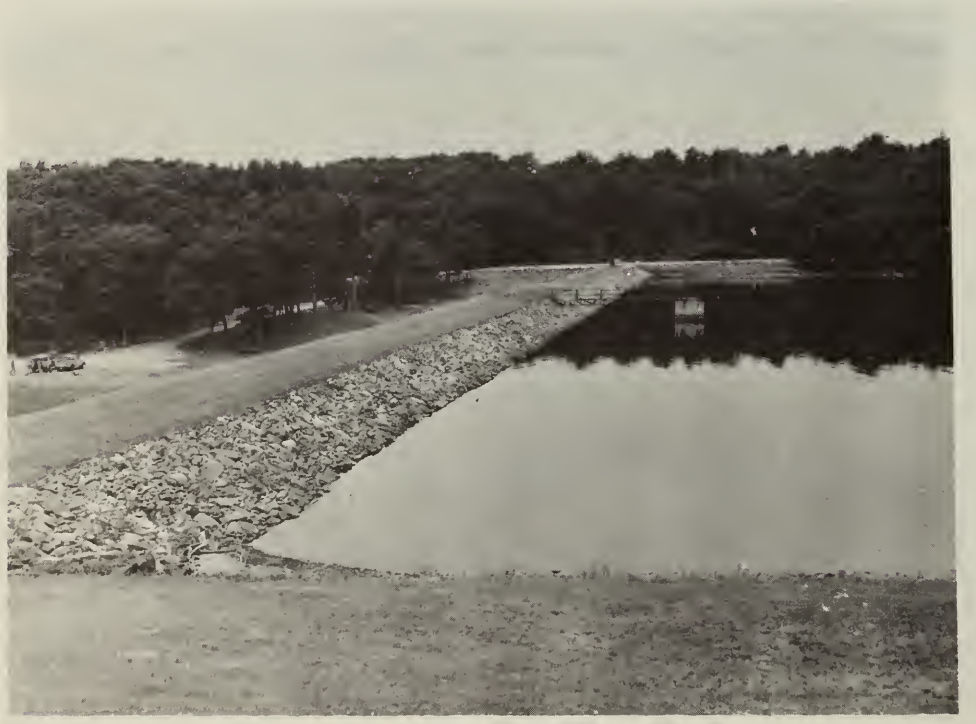
Wachusett Mountain, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1061	270	47	1900	3.0

Potential for Expansion: The site appears to be fully developed.

Remarks: The dam is an 880 foot long earth-fill structure with a 20 foot top width. The upstream slope is riprapped; the downstream slope is grassed. The principal spillway is a gated concrete box structure. A vegetated emergency spillway, located near Bickford Pond Road, is 50 feet wide and 2000 feet long. The dam is very well maintained.

Ownership and Use: The site is owned by the City of Fitchburg and is used as a water supply reservoir.



SITE CP-2946 (Bickford Pond)

Location: On the East Branch of the Ware River near Bickford Pond Road in Hubbardston, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1045	160	50	2240	3.5

Potential for Expansion: The dam is presently being expanded.

Remarks: The following statistics apply to the new dam being constructed by the City of Fitchburg. The dam is a 950 foot long earth-fill structure with a 15 inch thick concrete core wall. The upstream slope is rip-rapped and the downstream slope is grassed. The spillway is 100 feet long with a concrete box drop inlet. There is also a 2500 foot long earth-fill dike with a 15 inch thick concrete core wall. Bickford Pond has a capacity of 800 million gallons. It is used as a backup reservoir for Mare Meadow (Site CP-2945).

Ownership and Use: The site is owned by the City of Fitchburg and is used as a water supply reservoir.

SITE CP-2947 (Williamsville Pond)

Location: On the Burnshirt River near the intersection of Thompson and Williamsville Roads in Hubbardston, Mass.

Barre, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
814	40	10	7150	11.2

Potential for Expansion: Surface area could be more than tripled. Use of the present dam site would require about 3000 feet of dam and dike. A site about 2000 feet upstream would only require 800 feet of dam.

Remarks: Part of the dam is the Williamsville Road embankment. The spillway is a 52 foot long weir, 4.5 feet deep, which has flashboards. The outlet channel is masonry. There are vertical cracks in the spillway sidewalls. The masonry outlet channel is breaking up in places.

Ownership and Use: The pond is used for fishing and wildlife protection. The Soil Conservation Service was unable to obtain ownership information.

SITE CP-2948 (Brigham Pond)

Location: On the West Branch of the Ware River at Worcester Road in Hubbardston, Mass.

Barre, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
840	50	19	8300	13.0

Potential for Expansion: Limited; the pond is surrounded by roads, including State Route 68. Any expansion would also require extensive diking.

Remarks: The dam is a 250 foot long earth and stone rubble structure with a 20 foot top width. The principal spillway inlet is a 6 foot square box inlet drop structure; the outlet conduit is a 4 foot diameter pipe. The emergency spillway, located on the right abutment, is 40 feet wide and riprapped. Heavy brush and trees are growing on the downstream slope of the dam and in the emergency spillway. The emergency spillway riprap is breaking up in places.

Ownership and Use: The site is owned by the Metropolitan District Commission and is used for limited recreation.

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SITE CP-2949 (Asnacomet Pond)

Location: On an unnamed tributary of the East Branch of the Ware River near Route 62 in Hubbardston, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
909	130	8	1000	1.6

Potential for Expansion: The relatively small drainage area limits the potential for expansion.

Remarks: The dam is a 680 foot long earth-fill structure with a 14 foot top width. The upstream slope is vegetated; the downstream slope is riprapped. The principal spillway inlet is submerged; the outlet channel is riprapped. The paved emergency spillway has an 8 foot bottom width. Seepage is apparent at the toe of the dam and on both abutments.

Ownership and Use: The site is owned by the Metropolitan District Commission and is used primarily for recreation.

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SITE CP-2950 (Barre Falls)

Location: On the East Branch of the Ware River near Coldbrook Road in Barre, Mass.

Barre, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
flood pool 807	flood pool 1400	62	36,500	57.0

Potential for Expansion: The site appears to be developed to its potential.

Remarks: The dam is an 885 foot long earth-fill structure with a 25 foot top width. Both slopes are riprapped. The concrete principal spillway, located on the left abutment, is 60 feet long. Regulation of the flood pool is by two 4.5 foot by 9 foot gates. The emergency spillway is an ogee weir section located on the right abutment. A 3250 foot long dike is also used to contain the flood pool. Total capacity of the site is 24,200 acre-feet.

Ownership and Use: The dam is owned by the U.S. Army Corps of Engineers. The pool area is owned by the Metropolitan District Commission and is used for recreation and flood protection.

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SITE CP-2951 (Edson Pond)

Location: On Pomagusset Brook near Route 56 in Rutland, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1018	90	7	850	1.3

Potential for Expansion: The relatively small drainage area limits the potential for expansion.

Remarks: The dam is part of the Route 56 highway embankment. The spillway is a 16 foot long concrete weir that outlets to a concrete channel; and then to a road culvert. There is also an 18-inch pond drain.

Ownership and Use: The site is owned by Donald Martin and is used primarily for recreation.

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SITE CP-2952 (Cloverdale Dam)

Location: On an unnamed brook near Cloverdale Street in Rutland, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	(Sq. Mi.)
991	10	5	400	0.6

Potential for Expansion: The surface area could be quadrupled; the relatively small drainage area limits the potential for expansion. The expanded pool would be very shallow.

Remarks: The dam is a 150 foot long earth-fill structure with an 8 foot top width. The spillway is a 1.5 foot wide stone and concrete weir with flashboards. The downstream slope of the dam has light brush and trees growing on it.

Ownership and Use: The site is owned by Embert Stevens and is used for fishing and wildlife preservation.

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SITE CP-2953 (Moulton Pond)

Location: On Mill Brook at Pomagusset Road in Rutland, Mass.

Wachusett Mountain, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	(Sq. Mi.)
1009	75	14	650	1.0

Potential for Expansion: The relatively small drainage area limits the potential for expansion.

Remarks: The dam is an earth-fill structure with a rock masonry channel fitted for stop logs for water control. There is also a gated outlet for draining the pond. The downstream slope has heavy brush and small trees growing on it; the upstream slope has moderate brush growing. The stop logs need repair.

Ownership and Use: The site is owned by Henry Rutland and is used for fishing and wildlife protection. The Metropolitan District Commission owns a small section of the pond.

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SITE CP-2954
(Muddy Pond)

Location: On an unnamed tributary of the Ware River near Route 122 in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
801	25	14	900	1.4

Potential for Expansion: The surface area could be doubled with a very short dam.

Remarks: The dam is an abandoned Boston and Maine Railroad embankment. The downstream slope is gravel; the upstream slope is grassed. The spillway is a 4 foot by 5.5 foot rock masonry culvert that passes through the railroad embankment.

Ownership and Use: The site is owned by the Metropolitan District Commission and is used for wildlife preservation.

****

SITE CP-2955 (Whitehall Pond)

Location: On an unnamed brook near Whitehall Road in Rutland, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
837	175	21	4500	7.0

Potential for Expansion: Steep topography limits any significant increase in surface area. Expansion would disrupt an extensive recreation facility around the pond and State Route 122.

Remarks: The dam is part of a highway embankment. The upstream face is riprapped. A concrete spillway with a bedrock outlet channel, located on the right abutment, acts as the principal spillway. The axuiliary spillway is a 52 foot wide concrete ogee weir section. The site is part of the Rutland State Park Recreation Area.

Ownership and Use: The site is leased by the Massachusetts Department of Natural Resources and is used for recreation. The site is owned by the Metropolitan District Commission.

SITE CP-2956
(Demond Pond)

Location: On an unnamed brook near Pleasant Dale Road in Rutland, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
959	120	12	1650	2.6

Potential for Expansion: Steep topography limits any significant increase in surface area. Houses and camps lining the shore would be affected.

Remarks: The dam is a 175 foot long earth-fill structure with a 28 foot top width. Concrete walls support the upstream and downstream slopes which are both vertical. A field stone and masonry spillway, 14 feet long and 7 feet high is located on the right abutment.

Ownership and Use: The site is owned by the Metropolitan District Commission and is used primarily for recreation.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2901 DA= 0.66 SQ MI = 422 AC USGS QUAD-TEMPLETON LATITUDE 42-33-06 LONGITUDE 72-06/39																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.20 IN, PEAK FLOW = 202 CFS																	
1025.0	0	0.0		3		2.0	1036.1	E	146	4.1	2570	1038.5	25	1041.4	18	71	*****
1034.1	100	2.8	4200	18	22920	11.1	1036.6	E	156	4.4	2690	1039.0	26	1040.8	18	66	0.20
1036.5	149	4.1	3410	22	23020	13.5	1039.0	E	215	6.1	2370	1041.5	30	1043.5	20	87	0.25
1040.5	248	7.1	2590	28	22670	17.5	1043.0	E	330	9.3	1950	1045.3	37	1047.5	24	127	0.34
1042.5	310	8.8	2360	32	22800	19.5	1045.0	E	402	11.3	1820	1047.4	41	1049.8	27	156	0.39
SITE-CP-2902 DA= 3.40 SQ MI = 2176 AC USGS QUAD-TEMPLETON LATITUDE 42-32-07 LONGITUDE 72-05-54																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.20 IN, PEAK FLOW = 1039 CFS																	
993.0	0	0.0		27		1.0	999.1	E	753	4.1	310	1001.6	239	1004.6	13	9	*****
994.8	100	0.6	2820	80	3520	2.8	999.3	E	774	4.3	360	1001.8	240	1004.5	13	9	0.32
997.5	435	2.4	840	160	2280	5.6	1000.0	E	939	5.1	390	1002.5	245	1005.0	13	10	0.91
1001.0	1104	6.1	420	234	1970	9.0	1003.5	E	1737	9.6	260	1005.9	269	1008.8	17	18	1.60
1002.5	1472	8.1	340	245	2020	10.5	1005.0	E	2134	11.8	230	1007.1	279	1009.9	18	22	1.92
SITE-CP-2903 DA= 8.08 SQ MI = 5171 AC USGS QUAD-TEMPLETON LATITUDE 42-30-43 LONGITUDE 72-05-09																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1665 CFS																	
856.5	0	0.0		27		4.5	870.5	T	1788	4.1	430	875.5	298	882.3	30	104	*****
859.4	100	0.2	6440	44	14640	7.3	859.4	T	165	0.4	3910	870.3	250	876.4	24	56	0.39
870.9	1831	4.1	550	256	3930	18.9	870.9	T	1895	4.4	530	879.0	330	885.0	33	133	3.10
882.0	5292	12.3	270	356	3990	30.0	882.0	T	5356	12.3	270	889.0	410	894.8	43	274	5.60
891.0	8753	20.2	200	422	4130	39.0	891.0	T	8818	20.5	200	896.4	452	900.0	48	380	6.99
892.5	9395	21.7	200	431	4300	40.5	892.5	T	9460	22.0	200	896.9	455	900.0	48	381	7.11

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER	DAM				SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2904 DA= 0.56 SQ MI = 358 AC USGS QUAD-TEMPLETON LATITUDE 42-30-51 LONGITUDE 72-03-54																	
SITE RATING (2) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 169 CFS																	
1081.1	0	0.0		2		6.1	1093.8	E	124	4.1	1890	1096.3	28	1099.4	24	31	*****
1089.3	51	1.7	5080	10	25030	14.2	1091.8	E	88	3.0	2940	1096.1	28	1099.6	25	32	0.12
1090.6	67	2.2	3930	13	20470	15.7	1093.1	E	112	3.8	2350	1096.6	29	1099.5	24	31	0.14
1091.8	83	2.8	3940	16	20730	16.7	1091.8	T	88	2.9	3740	1096.6	29	1099.6	25	32	0.16
1092.5	94	3.2	3730	18	19960	17.5	1092.5	T	99	3.3	3570	1096.4	28	1099.9	25	33	0.18
SITE-CP-2905 DA= 1.36 SQ MI = 870 AC USGS QUAD-TEMPLETON LATITUDE 42-30-15 LONGITUDE 72-03-20																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 411 CFS																	
1007.4	0	0.0		2		10.3	1025.3	E	301	4.1	980	1027.6	39	1031.4	34	46	*****
1018.4	100	1.4	3430	20	16840	21.4	1026.9	E	359	4.9	960	1029.4	43	1032.6	36	51	0.25
1027.9	386	5.3	1310	40	12730	30.9	1032.4	E	599	8.3	850	1034.8	52	1037.6	41	84	0.59
1039.3	957	13.2	920	59	14780	42.3	1041.8	E	1125	15.5	780	1044.3	70	1047.1	50	185	0.98
1047.6	1528	21.1	800	77	15950	50.7	1050.1	E	1735	23.9	710	1052.5	87	1055.5	59	323	1.19
1051.1	1813	25.0	760	84	16420	54.1	1053.6	E	2040	28.0	680	1056.1	93	1059.1	62	395	1.24
SITE-CP-2906 DA= 1.96 SQ MI = 1254 AC USGS QUAD-GARDNER LATITUDE 42-30-26 LONGITUDE 71-57-48																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 518 CFS																	
1070.8	0	0.0		11		10.8	1078.1	E	434	4.1	610	1080.5	117	1083.4	23	13	*****
1073.9	100	1.0	2640	52	5050	13.8	1076.4	E	283	2.7	930	1078.9	103	1080.9	21	10	0.28
1076.8	299	2.9	1030	86	3600	16.7	1079.3	E	554	5.3	560	1081.6	128	1083.9	24	14	0.58
1080.6	698	6.6	570	118	3380	20.7	1083.1	E	1038	9.8	380	1085.6	164	1088.4	28	26	0.98
1082.5	928	8.8	490	135	3340	22.5	1085.0	E	1312	12.6	340	1087.1	179	1089.9	30	33	1.16

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2907 DA= 2.88 SQ MI = 1843 AC — USGS QUAD-BARRE — LATITUDE 42-29-26 LONGITUDE 72-03-15																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 869 CFS																
910.0	0	0.0		7		6.1	935.6 E	882	5.6	700	938.0	72	941.3	37	145	*****
917.6	100	0.7	6180	19	3317C	13.7	917.6 T	123	0.8	5020	930.5	54	933.9	30	87	0.31
933.5	723	4.6	1280	61	1519C	29.5	944.0 E	1524	9.8	610	946.5	96	949.6	46	235	1.17
949.0	1970	12.8	680	103	1304C	45.0	955.5 E	2721	17.7	490	957.9	127	961.0	57	398	2.03
964.0	3840	25.0	450	146	1192C	60.0	968.5 E	4555	29.7	380	971.0	168	974.3	70	661	2.63
SITE-CP-2908 DA= 2.95 SQ MI = 1888 AC — USGS QUAD-WACHUSETT MTN — LATITUDE 42-28-53 LONGITUDE 71-59-5L																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 795 CFS																
855.9	0	0.0		6		7.8	878.1 E	783	5.0	750	880.6	72	883.3	35	161	*****
863.9	100	0.6	5980	23	2560C	15.8	863.9 T	124	0.8	4840	874.8	57	877.5	30	112	0.31
877.9	739	4.6	1220	65	1389C	29.9	888.4 E	1561	9.8	580	890.8	91	893.5	46	281	1.19
893.5	2017	12.8	630	99	1279C	45.5	900.0 E	2740	17.4	460	902.4	127	905.0	57	462	2.09
909.0	3933	25.0	430	151	1117C	61.0	913.5 E	4666	29.7	360	916.0	172	919.0	71	753	2.69
SITE-CP-2909 DA= 6.92 SQ MI = 4429 AC — USGS QUAD-WACHUSETT MTN — LATITUDE 42-28-34 LONGITUDE 71-59-03																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1301 CFS																
916.0	0	0.0		13		16.0	954.9 T	1532	4.1	840	965.4	95	968.5	69	236	*****
921.5	100	0.3	4470	22	2000C	21.5	921.5 T	155	0.4	2870	932.5	36	935.0	35	30	0.37
933.4	455	1.2	1410	37	1743C	33.4	933.4 T	510	1.4	1260	944.3	47	947.0	47	71	1.18
949.5	1165	3.2	1150	53	2541C	49.5	949.5 T	1220	3.3	1100	964.4	91	967.1	67	220	2.19
960.8	1875	5.1	750	74	1882C	60.8	960.8 T	1931	5.1	720	967.5	106	969.9	70	251	2.93
962.5	2013	5.5	690	82	1685C	62.5	962.5 T	2068	5.6	670	967.9	107	969.9	70	251	3.05

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV + TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2910 DA= 0.73 SQ MI = 467 AC USGS QUAD-WACHUSETT MTN LATITUDE 42-28-28 LONGITUDE 71-54-20																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 220 CFS																
1191.9	0	0.0		5		1.9	1200.6 E	162	4.1	980	1203.0	41	1205.6	16	18	*****
1198.6	100	2.5	1940	24	807C	8.7	1201.1 E	177	4.5	1100	1203.6	44	1205.9	16	19	0.20
1200.1	138	3.5	1680	28	816C	10.2	1202.6 E	231	5.9	1010	1205.0	51	1207.4	17	25	0.25
1201.4	176	4.5	1530	34	795C	11.3	1203.9 E	280	7.1	960	1206.1	56	1208.6	19	31	0.29
1202.4	215	5.5	1440	39	796C	12.3	1204.9 E	333	8.5	930	1207.3	61	1209.9	20	38	0.32
1202.5	217	5.6	1430	39	794C	12.5	1205.0 E	335	8.6	930	1207.4	61	1209.9	20	38	0.33
SITE-CP-2911 DA= 4.50 SQ MI = 2880 AC USGS QUAD-BARRE LATITUDE 42-28-23 LONGITUDE 72-03-07																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 1238 CFS																
844.5	0	0.0		12		5.6	876.8 E	1693	7.1	390	879.3	106	884.5	46	165	*****
854.0	218	0.8	2410	32	1622C	15.1	854.0 T	254	1.1	2070	865.0	61	868.0	29	50	0.62
870.5	1087	4.5	930	80	1254C	31.5	870.5 T	1123	4.6	900	883.4	117	886.6	48	186	1.77
887.1	2826	11.8	490	126	1114C	48.2	897.6 E	4298	17.9	330	900.0	153	903.9	65	446	3.05
899.6	4565	19.0	380	152	1155C	60.6	899.6 T	4601	19.2	380	906.6	184	909.9	71	572	3.80
902.5	5011	20.9	360	164	1087C	63.5	902.5 T	5047	21.0	350	907.5	187	909.8	71	569	3.92
SITE-CP-2912 DA= 0.72 SQ MI = 461 AC USGS QUAD-BARRE LATITUDE 42-28-19 LONGITUDE 72-06-37																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 157 CFS																
1052.8	0	0.0		4		7.8	1065.3 E	159	4.1	1260	1067.6	27	1069.6	25	27	*****
1062.6	100	2.5	2220	18	1239C	17.6	1065.1 E	156	4.1	1420	1067.5	27	1068.9	24	24	0.20
1065.8	165	4.3	1690	24	1167C	20.7	1068.3 E	237	6.1	1180	1070.5	34	1072.0	27	34	0.28
1068.1	230	6.0	1480	29	1186C	23.2	1070.6 E	316	8.2	1080	1073.1	43	1075.0	30	46	0.34
1072.1	361	9.3	1250	40	1138C	27.0	1074.6 E	478	12.5	950	1077.0	57	1079.1	34	69	0.43
1072.5	376	9.8	1230	41	1124C	27.5	1075.0 E	497	12.8	930	1077.3	58	1079.5	35	71	0.45

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2913	DA= 1.12 SQ MI = 717 AC						USGS QUAD-BARRE					LATITUDE 42-27-59		LONGITUDE 72-06-29			
SITE RATING (1)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 8.10 IN, PEAK FLOW = 239 CFS					
1041.0	0	0.0		4		11.0	1051.9	E	248	4.1	800	1054.3	46	1056.6	27	26	*****
1049.3	148	2.5	1570	32	738C	19.2	1051.8	E	245	4.1	950	1054.1	45	1055.6	26	23	0.30
1050.9	205	3.4	1280	37	719C	20.9	1053.4	E	313	5.1	840	1055.8	50	1057.3	27	29	0.37
1052.4	262	4.4	1110	41	714C	22.4	1054.9	E	382	6.4	760	1057.1	54	1058.8	29	34	0.43
1052.5	265	4.4	1100	41	714C	22.5	1055.0	E	385	6.4	760	1057.3	54	1058.9	29	34	0.43
SITE-CP-2916	DA= 0.64 SQ MI = 410 AC						USGS QUAD-WACHUSETT MTN					LATITUDE 42-26-29		LONGITUDE 71-56-37			
SITE RATING (1)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 8.00 IN, PEAK FLOW = 191 CFS					
1041.1	0	0.0		5		1.1	1047.6	E	142	4.1	570	1050.1	48	1053.0	13	5	*****
1046.6	100	2.9	1170	31	372C	6.6	1049.1	E	199	5.8	590	1051.4	52	1054.0	14	6	0.18
1048.5	169	5.0	840	41	349C	8.5	1051.0	E	289	8.5	490	1053.3	59	1056.0	16	9	0.27
1050.1	238	7.0	720	48	359C	10.1	1052.6	E	375	11.0	460	1055.0	64	1058.1	18	13	0.33
1052.5	365	10.7	560	56	363C	12.5	1055.0	E	520	15.2	390	1056.8	70	1059.3	19	17	0.41
SITE-CP-2918	DA= 1.01 SQ MI = 646 AC						USGS QUAD-BARRE					LATITUDE 42-26-01		LONGITUDE 72-04-28			
SITE RATING (1)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 8.10 IN, PEAK FLOW = 305 CFS					
829.3	0	0.0		2		9.3	847.8	E	224	4.1	1170	850.1	35	852.8	33	40	*****
842.6	100	1.9	2660	17	1608C	22.7	845.1	E	156	2.9	1710	847.5	28	849.5	30	31	0.23
850.5	308	5.6	1260	37	1062C	30.5	853.0	E	421	7.8	920	855.5	57	857.9	38	59	0.46
858.5	723	13.3	800	69	837C	38.5	861.0	E	921	17.1	630	863.4	91	866.5	47	107	0.73
865.8	1347	25.0	580	102	765C	45.8	868.3	E	1624	30.0	480	869.9	121	873.1	53	161	0.92

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-2920 DA= 1.37 SQ MI = 877 AC — USGS QUAD-WACHUSETT MTN — LATITUDE 42-24-54 LONGITUDE 72-57-33																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 408 CFS																	
1024.1	0	0.0		8		2.0	1034.1	E	303	4.1	850	1036.4	65	1039.1	17	24	*****
1029.4	100	1.4	2280	30	771C	7.3	1031.9	E	200	2.7	1140	1034.3	54	1036.0	14	14	0.25
1033.9	286	3.9	1260	52	688C	11.8	1036.4	E	445	6.1	810	1038.9	78	1041.0	19	32	0.50
1039.5	658	9.0	880	81	711C	17.5	1042.0	E	896	12.3	640	1044.4	118	1046.8	25	61	0.82
1042.5	934	12.8	750	103	680C	20.5	1045.0	E	1226	16.7	570	1047.0	138	1049.6	28	80	0.97
SITE-CP-2921 DA= 1.02 SQ MI = 653 AC — USGS QUAD-WACHUSETT MTN — LATITUDE 42-24-30 LONGITUDE 72-58-49																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 304 CFS																	
949.4	0	0.0		2		9.3	967.0	E	226	4.1	1270	969.5	51	972.0	32	52	*****
966.0	174	3.2	2010	35	1005C	26.0	968.5	E	286	5.3	1230	971.0	56	973.0	33	56	0.33
968.3	271	5.0	1480	46	877C	28.2	970.8	E	408	7.5	980	973.3	63	975.5	36	67	0.43
970.3	367	6.6	1210	54	822C	30.2	972.8	E	521	9.6	850	975.1	69	977.5	38	79	0.50
971.9	463	8.5	1040	59	812C	31.9	974.4	E	627	11.5	770	976.8	74	979.0	39	89	0.59
972.5	496	9.1	990	61	810C	32.5	975.0	E	664	12.2	740	977.3	75	979.5	40	92	0.61
SITE-CP-2922 DA= 3.60 SQ MI = 2304 AC — USGS QUAD-PETERSHAM — LATITUDE 42-24-58 LONGITUDE 72-08-39																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.10 IN, PEAK FLOW = 1009 CFS																	
964.9	0	0.0		17		2.9	975.9	E	797	4.1	390	978.3	198	980.6	19	18	*****
968.6	107	0.6	3480	40	935C	6.6	977.1	E	1012	5.3	370	979.5	222	982.5	21	23	0.34
976.5	889	4.6	660	168	347C	14.6	981.0	E	1843	9.6	320	983.5	261	987.3	25	38	1.45
983.6	2453	12.8	310	262	292C	21.7	986.1	E	3169	16.5	240	988.5	308	991.5	30	57	2.55
991.5	4800	25.0	220	333	315C	29.5	994.0	E	5688	29.5	180	996.0	368	999.8	38	117	3.28

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(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION, FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICCPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2924 DA= 4.40 SQ MI = 2816 AC USGS QUAD-PETERSHAM LATITUDE 42-24-03 LONGITUDE 72-08-48																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 955 CFS																
928.0	0	0.0		15		4.0	960.0 E	1384	5.9	570	962.5	96	965.5	41	204	*****
932.6	100	0.4	4900	25	1945C	8.7	932.6 T	135	0.6	3620	945.6	42	948.5	25	57	0.35
949.1	673	2.9	1340	48	1871C	25.2	949.1 T	708	3.0	1270	960.1	77	962.6	39	172	1.31
965.0	1818	7.6	750	115	1185C	41.0	971.5 E	2795	11.8	490	973.9	236	976.3	52	359	2.42
972.5	2955	12.6	540	206	773C	48.5	975.0 E	3570	15.2	450	977.4	309	979.5	56	416	3.09
SITE-CP-2925 DA= 0.48 SQ MI = 307 AC USGS QUAD-PETERSHAM LATITUDE 42-23-33 LONGITUDE 72-09-49																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 145 CFS																
1010.9	0	0.0		4		0.8	1016.9 E	106	4.1	1070	1019.0	40	1021.5	12	10	*****
1016.8	100	3.9	1890	30	629C	6.8	1019.3 E	192	7.5	980	1021.6	49	1024.6	15	17	0.18
1018.5	162	6.3	1350	38	577C	8.6	1021.0 E	273	10.7	800	1023.0	53	1026.0	16	21	0.23
1020.1	224	8.8	1100	45	555C	10.2	1022.6 E	349	13.6	710	1024.3	56	1027.1	17	25	0.28
1022.5	336	13.1	870	51	576C	12.5	1025.0 E	477	18.6	620	1026.3	62	1029.1	19	33	0.34
SITE-CP-2926 DA= 0.81 SQ MI = 518 AC USGS QUAD-PETERSHAM LATITUDE 42-23-31 LONGITUDE 72-07-43																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 245 CFS																
823.5	0	0.0		6		1.5	831.1 E	179	4.1	490	833.5	45	836.3	14	6	*****
829.0	100	2.3	1120	30	375C	7.0	831.5 E	192	4.5	580	833.9	47	836.1	14	6	0.21
830.3	140	3.2	890	35	358C	8.3	832.8 E	245	5.6	510	835.3	51	837.5	16	7	0.26
831.4	181	4.1	750	39	354C	9.3	833.9 E	293	6.8	460	836.1	55	838.5	17	8	0.31
832.4	221	5.1	680	42	358C	10.3	834.9 E	343	7.8	440	837.3	58	839.8	18	10	0.34
832.5	226	5.1	670	42	358C	10.5	835.0 E	349	8.1	430	837.4	58	839.9	18	11	0.35

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2927 DA= 2.50 SQ MI = 1600 AC — USGS QUAD-WACHUSETT MTN — LATITUDE 42-22-43 LONGITUDE 72-58-14																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 719 CFS																	
966.0	0	0.0		16		2.0	976.1	E	553	4.1	330	978.6	103	981.1	17	6	*****
969.5	100	0.8	2060	42	487C	5.5	978.0	E	721	5.4	290	980.5	113	983.1	19	8	0.30
973.6	335	2.5	680	70	323C	9.7	978.1	E	736	5.5	310	980.6	114	982.6	19	8	0.68
979.0	804	6.0	330	105	253C	15.1	981.5	E	1102	8.3	240	984.0	126	986.0	22	12	1.17
982.5	1194	9.0	250	121	249C	18.5	985.0	E	1527	11.5	200	987.4	139	989.5	25	17	1.48
SITE-CP-2928 DA= 7.20 SQ MI = 4608 AC — USGS QUAD-PETERSHAM — LATITUDE 42-22-41 LONGITUDE 72-09-42																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1406 CFS																	
785.5	0	0.0		18		5.5	817.4	T	1594	4.1	680	827.9	94	831.0	51	208	*****
789.7	100	0.3	4140	32	1287C	9.7	789.7	T	158	0.4	2630	800.7	47	803.2	23	28	0.37
819.5	1683	4.4	810	76	1788C	39.5	819.5	T	1741	4.5	780	834.4	109	837.6	58	287	2.80
848.5	4850	12.6	590	147	1955C	68.5	848.5	T	4908	12.8	590	861.3	184	871.0	91	973	5.07
872.5	9249	24.1	340	223	1430C	92.5	872.5	T	9306	24.2	340	877.5	240	879.5	100	1233	6.51
SITE-CP-2929 DA= 3.23 SQ MI = 2067 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-22-04 LONGITUDE 72-05-55																	
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 929 CFS																	
697.7	0	0.0		4		17.7	723.2	T	715	4.1	830	729.5	74	732.7	53	67	*****
707.7	100	0.6	4620	17	27410	27.7	707.7	T	126	0.7	3670	718.5	47	721.5	42	33	0.32
725.0	801	4.6	860	63	10900	45.0	725.0	T	827	4.8	830	734.0	80	736.8	57	89	1.30
742.8	2203	12.8	490	94	11400	62.8	742.8	T	2229	12.8	480	749.7	108	751.8	72	227	2.28
761.7	4307	25.0	380	125	13110	81.6	761.7	T	4332	25.2	380	768.7	133	771.0	91	557	2.95

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-2930 DA= 1.71 SQ MI = 1094 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-21-56 LONGITUDE 72-04-21																
SITE RATING (2) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 510 CFS																
881.5	0	0.0		4		6.5	904.6 E	378	4.1	640	907.0	31	909.4	34	33	*****
892.3	100	1.1	2600	14	1800C	17.2	892.3 T	114	1.2	2280	899.1	22	901.0	26	17	0.27
907.9	463	5.1	890	32	1276C	32.9	914.4 E	722	7.8	570	916.9	50	918.8	44	67	0.72
923.0	1188	13.0	730	69	1250C	48.0	925.5 E	1387	15.2	620	928.0	89	930.0	55	165	1.22
932.5	2013	22.1	650	103	1269C	57.5	935.0 E	2290	25.1	570	937.3	117	939.8	65	319	1.50
SITE-CP-2932 DA= 1.39 SQ MI = 890 AC — USGS QUAD-PAXTON — LATITUDE 42-21-12 LONGITUDE 72-57-40																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 414 CFS																
994.0	0	0.0		10		2.0	1003.3 E	308	4.1	580	1005.6	48	1008.4	16	23	*****
998.5	100	1.2	1860	34	554C	6.5	1001.0 E	208	2.8	890	1003.4	45	1005.0	13	14	0.25
1011.0	684	9.2	570	55	701C	19.0	1013.5 E	839	11.3	460	1016.0	65	1017.9	26	60	0.84
1020.1	1269	17.1	480	73	843C	28.2	1022.6 E	1466	19.7	420	1025.0	78	1027.3	35	130	1.13
1027.8	1853	25.0	460	81	1051C	35.8	1030.3 E	2071	27.9	410	1032.6	89	1035.1	43	220	1.26
SITE-CP-2933 DA= 0.63 SQ MI = 403 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-21-07 LONGITUDE 72-05-48																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 188 CFS																
853.9	0	0.0		3		3.9	868.0 E	139	4.1	1510	870.3	25	873.3	23	30	*****
866.0	100	3.0	2400	17	1401C	16.1	868.5 E	153	4.6	1570	871.0	28	873.0	23	29	0.18
868.3	141	4.1	1960	21	1319C	18.2	870.8 E	206	6.1	1340	873.1	35	875.3	25	37	0.24
870.0	182	5.4	1740	24	1303C	20.1	872.5 E	260	7.6	1220	875.0	42	877.5	28	47	0.28
872.5	251	7.5	1480	33	1134C	22.5	875.0 E	350	10.3	1060	877.4	50	879.9	30	60	0.34

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-2934 DA= 1.37 SQ MI = 877 AC USGS QUAD-NORTH BROOKFIELD LATITUDE 42-21-18 LONGITUDE 72-05-13																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 408 CFS																
874.5	0	0.0		7		2.5	887.1 E	303	4.1	740	889.6	42	892.0	20	32	*****
880.9	100	1.4	1920	24	7980	8.8	883.4 E	177	2.4	1080	885.9	34	887.4	15	16	0.25
887.5	303	4.1	1040	38	8300	15.5	890.0 E	414	5.6	760	892.5	49	894.0	22	40	0.52
896.0	709	9.7	790	58	9700	24.0	898.5 E	870	11.8	640	901.0	69	903.0	31	105	0.85
902.3	1115	15.2	680	72	10530	30.2	904.8 E	1313	18.0	580	907.1	83	909.5	37	178	1.06
902.5	1130	15.5	680	73	10560	30.5	905.0 E	1329	18.2	580	907.4	83	909.6	38	181	1.07
SITE-CP-2935 DA= 5.76 SQ MI = 3686 AC USGS QUAD-WARE LATITUDE 42-20-32 LONGITUDE 72-08-44																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1717 CFS																
564.4	0	0.0		33		1.4	575.5 E	1722	5.6	300	578.0	270	581.5	19	84	*****
566.3	100	0.3	6420	79	8180	3.3	576.8 E	2038	6.6	320	579.2	286	584.5	22	124	0.37
574.0	1363	4.4	660	221	4040	11.1	580.5 E	3113	10.1	290	583.0	314	587.5	25	171	2.26
583.3	3890	12.7	340	315	4170	20.2	587.8 E	5416	17.6	240	590.3	356	593.9	31	306	4.06
590.8	6417	20.9	280	359	5070	27.7	590.8 T	6463	21.0	280	596.5	392	600.0	37	472	5.02
592.5	7030	22.9	260	369	5000	29.5	592.5 T	7076	23.0	260	597.2	395	600.0	37	471	5.13
SITE-CP-2936 DA= 0.81 SQ MI = 518 AC USGS QUAD-NORTH BROOKFIELD LATITUDE 42-20-41 LONGITUDE 72-05-01																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 242 CFS																
923.8	0	0.0		4		2.8	936.5 E	179	4.1	730	939.0	31	942.1	21	15	*****
933.3	100	2.3	1440	19	7620	12.3	935.8 E	160	3.6	900	938.3	29	940.0	19	11	0.21
936.0	161	3.6	1090	25	7060	15.1	938.5 E	237	5.5	740	941.0	35	942.9	22	16	0.29
940.3	282	6.5	830	34	6990	19.2	942.8 E	379	8.8	620	945.0	43	947.5	27	28	0.40
942.5	363	8.3	760	38	7200	21.5	945.0 E	471	10.8	580	947.4	48	949.9	29	36	0.47

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-2937 DA= 2.24 SQ MI = 1434 AC USGS QUAD-WARE LATITUDE 42-19-49 LONGITUDE 72-08-45																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 668 CFS																
570.5	0	0.0		11		2.5	586.0 E	621	5.1	700	588.4	74	591.8	24	90	*****
575.5	100	0.8	4600	29	1571C	7.5	586.0 E	620	5.1	740	588.4	75	591.5	24	88	0.29
585.5	581	4.9	1130	65	1012C	17.6	592.0 E	1093	9.1	600	594.5	92	597.5	30	147	0.92
597.2	1543	12.8	640	99	1002C	29.2	601.7 E	2036	17.0	480	604.2	118	607.2	39	278	1.59
605.9	2506	21.0	490	124	9900	37.9	608.4 E	2842	23.7	430	610.9	139	613.4	45	389	1.95
609.7	2987	25.0	460	135	1017C	41.7	612.2 E	3355	28.0	410	614.5	150	617.2	49	467	2.03
SITE-CP-2938 DA= 1.38 SQ MI = 883 AC USGS QUAD-WARE LATITUDE 42-19-09 LONGITUDE 72-08-55																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 411 CFS																
612.0	0	0.0		3		7.0	638.8 E	305	4.1	1230	641.3	25	644.2	39	78	*****
626.5	100	1.4	4100	11	3754C	21.5	626.5 T	111	1.5	3700	635.5	18	638.5	34	54	0.25
642.5	390	5.3	1460	28	2072C	37.5	649.0 E	615	8.3	930	651.5	43	654.3	49	135	0.60
657.2	970	13.2	820	52	1537C	52.1	659.7 E	1115	15.1	710	662.2	61	664.5	60	219	0.99
670.7	1840	25.0	600	79	1408C	65.6	673.2 E	2055	27.9	540	675.5	90	678.3	73	378	1.25
SITE-CP-2939 DA= 0.82 SQ MI = 525 AC USGS QUAD-WACHUSETT MTN LATITUDE 42-26-44 LONGITUDE 71-56-22																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 244 CFS																
988.4	0	0.0		2		8.3	1008.5 E	181	4.1	1440	1011.0	20	1013.4	33	46	*****
1003.8	100	2.3	2640	13	2032C	23.7	1006.3 E	142	3.2	1860	1008.5	18	1010.1	30	36	0.21
1012.0	244	5.6	1490	21	1746C	32.0	1014.5 E	304	6.8	1200	1017.0	24	1018.4	38	66	0.37
1023.5	531	12.1	1060	30	1854C	43.5	1026.0 E	616	14.1	920	1028.4	36	1030.1	50	131	0.57
1031.6	818	18.7	920	40	1870C	51.5	1034.1 E	929	21.2	810	1036.5	48	1038.6	59	200	0.69
1032.5	855	19.6	910	42	1855C	52.5	1035.0 E	968	22.1	800	1037.4	50	1039.6	60	208	0.70

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-2940 DA= 9.10 SQ MI = 5824 AC USGS QUAD-WARE LATITUDE 42-21-21 LONGITUDE 72-09-42																	
SITE RATING (3)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM					RUNOFF = 8.10 IN, PEAK FLOW = 1647 CFS					
614.0	0	0.0		11		12.0	657.8	T	2014	4.1	1080	670.0	122	685.5	84	657	*****
621.3	100	0.2	8010	16	4882C	19.2	621.3	T	173	0.4	4640	636.2	42	640.0	38	90	0.41
649.0	1229	2.5	1110	70	1952C	47.0	649.0	T	1302	2.7	1040	662.0	105	665.5	64	319	2.51
671.8	3487	7.1	650	124	1813C	69.8	671.8	T	3560	7.3	630	684.7	147	690.9	89	775	4.76
692.5	6450	13.2	400	169	1514C	90.5	692.5	T	6523	13.3	390	697.5	183	699.5	98	994	6.57

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

WARE RIVER (CP-29)

CHICOPEE RIVER STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

SHEET 1 of 2

USDA-SCS-HYATTSVILLE MD. 1973

MATCH SHEET 1

MATCH SHEET 1

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LEGEND

WATERSHED BOUNDARY

DRAINAGE AREA ABOVE STRUCTURE

POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE

EXISTING POND OR RESERVOIR

LOCATION MAP

Source - USGS Quad Sheets
Barre - 1954
Gardner - 1954
North Brookfield - 1967
Paxton - 1965
Petersham - 1954
Templeton - 1954
Wachusett Mtn. - 1956
Ware - 1954

WARE RIVER (CP-29)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET 2 OF 2

USDA-SCS-HYATTSVILLE, MD. 1973

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-30, Danforth Brook

This subwatershed covers about 3,400 acres in the Town of Hardwick (Worcester County). Danforth Brook flows southerly through Hardwick to the confluence with the Ware River. Elevations range from a high of about 1140 on Poverty Hill to a low of about 540 in Gilbertville. Geology of the subwatershed is characterized by schist bedrock overlain by 10 to 20 feet of glacial till.

Six potential reservoir sites were studied.

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SITE CP-3001

Location: On Danforth Brook about 350 feet upstream from Jackson Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°22'18" Longitude: 72°11'30"

Facilities Affected: None below elevation 980.

Geologic Conditions: The right abutment is glacial till. The left abutment is glacial till underlain by schist bedrock. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3002

Location: On Danforth Brook about 600 feet upstream from North Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°22'04" Longitude: 72°11'16"

Facilities Affected:

Facility	Elevation
Jackson Road	953
Utility poles	953

Geologic Conditions: Both abutments are glacial till underlain by bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3004

Location: On Danforth Brook about 1900 feet upstream from Ruggles Hill Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°21'32" Longitude: 72°11'13"

Facilities Affected:

Facility	Elevation
House	911
North Road	908
Utility poles	908

Geologic Conditions: Both abutments are thin glacial till underlain by schist bedrock. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. If the site is developed to elevation 900, a dike will be required to the west of the reservoir. There is a breached dam at the site.

****

SITE CP-3005

Location: On Danforth Brook about 50 feet upstream from Barre Road (Route 32) in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°20'47" Longitude: 72°11'35"

Facilities Affected:

Facility	Elevation
Route 32 and utility poles	845
Ruggles Road	842
Utility poles	842
House and barn	840

Geologic Conditions: Both abutments are glacial till underlain by bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3006

Location: On Danforth Brook about 3400 feet upstream from Gilbertville Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°20'11" Longitude: 72°12'03"

Facilities Affected:

Facility	Elevation
House	850
Two barns, 3 silos, shed	850
Route 32 and utility poles	845
Milk plant	840
Barn and silo	840
House and barn	840

Geologic Conditions: Both abutments are thin glacial till underlain by bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3007

Location: On Danforth Brook about 3300 feet downstream from Gilbertville Road (Route 32) in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°19'13" Longitude: 72°12'34"

Facilities Affected:

Facility	Elevation
Turkey Street	725
Utility poles	725

Geologic Condition: Both abutments are glacial till underlain by schist bedrock. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Water-holding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-DANFORTH BROOK

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3001 DA= 0.52 SQ MI = 333 AC — USGS QUAD-WARE — LATITUDE 42-22-18 LONGITUDE 72-11-30																
SITE RATING (1) — STREAM WATER QUALITY (8) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 157 CFS																
953.8	0	0.0		3		0.8	961.0 E	115	4.1	1070	963.1	34	965.9	13	15	*****
960.5	100	3.5	1660	26	6440	7.6	963.0 E	177	6.4	940	965.5	41	968.0	15	18	0.18
965.1	248	9.0	890	40	5540	12.2	967.6 E	362	13.1	610	969.6	53	972.6	20	24	0.31
969.5	446	16.1	640	53	5420	16.5	972.0 E	589	21.2	480	973.4	59	976.4	23	36	0.41
973.0	644	23.2	540	58	5960	20.1	975.5 E	797	28.7	430	976.6	63	979.6	27	50	0.47
973.9	693	25.0	520	59	6110	20.9	976.4 E	850	30.5	430	977.5	64	980.5	27	54	0.47
SITE-CP-3002 DA= 0.69 SQ MI = 442 AC — USGS QUAD-WARE — LATITUDE 42-22-04 LONGITUDE 72-11-16																
SITE RATING (1) — STREAM WATER QUALITY (8) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 208 CFS																
943.8	0	0.0		3		3.8	955.5 E	153	4.1	1250	958.0	44	961.0	21	27	*****
954.0	100	2.7	2320	26	9020	14.0	956.5 E	185	5.0	1260	958.9	48	961.0	21	27	0.20
957.9	237	6.4	1340	44	7240	17.9	960.4 E	366	9.8	870	962.9	64	966.1	26	44	0.34
963.0	510	13.8	790	64	6280	23.0	965.5 E	688	18.7	590	967.0	80	970.0	30	62	0.50
966.8	783	21.2	580	79	5730	26.7	969.3 E	997	27.0	450	970.0	91	971.4	31	69	0.60
967.5	841	22.9	680	81	7060	27.5	967.5 T	847	23.0	680	970.0	91	973.9	34	83	0.61
SITE-CP-3004 DA= 1.70 SQ MI = 1088 AC — USGS QUAD-WARE — LATITUDE 42-21-32 LONGITUDE 72-11-13																
SITE RATING (1) — STREAM WATER QUALITY (8) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 507 CFS																
894.0	0	0.0		7		4.0	910.0 E	376	4.1	520	912.5	50	915.1	25	21	*****
901.5	100	1.1	1600	21	7770	11.6	904.0 E	173	1.9	920	906.5	33	908.5	19	7	0.27
905.0	185	2.0	1080	29	6880	15.0	907.5 E	279	3.0	720	909.9	41	912.0	22	13	0.41
909.9	355	3.9	840	41	7230	19.9	912.4 E	482	5.3	620	914.8	58	916.9	27	26	0.62
912.5	473	5.1	770	50	7290	22.5	915.0 E	623	6.8	580	917.4	67	919.5	30	39	0.73

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-DANFORTH BROOK

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	AT 95 PERCENT CHANCE (MGD)
SITE-CP-3005 DA= 2.35 SQ MI = 1504 AC USGS QUAD-WARE LATITUDE 42-20-47 LONGITUDE 72-11-35																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 626 CFS																	
834.0	0	0.0		16		2.0	843.8	E	520	4.1	410	846.1	81	848.9	17	18	*****
837.4	100	0.8	2090	43	4850	5.4	841.9	E	382	3.0	550	844.3	76	846.4	14	13	0.30
840.1	253	2.0	910	65	3550	8.2	842.6	E	443	3.5	520	845.1	79	847.0	15	15	0.57
844.5	559	4.5	520	77	3800	12.5	847.0	E	779	6.1	370	849.5	90	851.5	19	25	0.92
847.5	799	6.4	590	85	5520	15.5	847.5	T	818	6.5	570	850.0	92	852.0	20	26	1.14
SITE-CP-3006 DA= 3.34 SQ MI = 2138 AC USGS QUAD-WARE LATITUDE 42-20-11 LONGITUDE 72-12-03																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 890 CFS																	
823.5	0	0.0		14		3.5	837.0	E	739	4.1	420	839.5	138	842.0	22	19	*****
828.0	100	0.6	3440	31	10910	8.0	838.5	E	912	5.1	380	840.9	150	844.0	24	23	0.32
833.6	398	2.2	1000	79	5040	13.7	840.1	E	1152	6.5	340	842.6	160	845.6	26	27	0.85
839.3	994	5.6	500	137	3660	19.2	843.8	E	1708	9.6	290	846.1	181	849.0	29	38	1.49
842.5	1470	8.3	370	159	3420	22.5	845.0	E	1914	10.7	280	847.4	188	849.6	30	40	1.90
SITE-CP-3007 DA= 4.79 SQ MI = 3066 AC USGS QUAD-WARE LATITUDE 42-19-13 LONGITUDE 72-12-34																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 948 CFS																	
669.5	0	0.0		6		19.5	722.0	E	1344	5.3	620	724.5	51	727.0	77	221	*****
680.4	100	0.4	3430	12	28320	30.4	682.9	E	171	0.7	2010	685.3	14	687.0	37	31	0.35
702.5	533	2.0	1180	30	21220	52.5	705.0	E	647	2.5	970	707.5	35	709.3	59	107	1.18
723.8	1398	5.5	710	51	19580	73.8	726.3	E	1564	6.1	640	728.8	55	730.4	80	251	2.11
742.5	2516	9.8	610	71	21660	92.5	742.5	T	2554	10.0	610	747.4	80	749.2	99	456	2.99

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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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LEGEND

WATERSHED BOUNDARY

DRAINAGE AREA ABOVE STRUCTURE

POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE

SOURCE - USGS QUAD
PETERSHAM - 1954
WARE - 1954

0 ½ 1 MILE

1000 0 1000 2000 3000 FEET

DANFORTH BROOK (CP-30)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

USDA-SCS-HYATTSVILLE, MD. 1972

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-31, Ware River

This subwatershed covers about 37,400 acres in the Towns of Hardwick, New Braintree, Warren and West Brookfield (Worcester County), Palmer (Hampden County) and Ware (Hampshire County). There is a U.S. Geological Survey stream gaging station on the Ware River in Ware.

The Ware River flows southwesterly through the eastern portion of the subwatershed in the Towns of New Braintree, Ware and Palmer. Muddy Brook and Flat Brook are the major tributaries. Both originate in Hardwick and flow southerly to the confluence in Ware. Elevations range from a high of about 1140 in Hardwick to a low of about 310 in Palmer. Geology of the subwatershed is characterized by schist bedrock overlain by 15 to 50 feet of glacial till, englacial drift or outwash sand and gravel.

Seventeen potential reservoir sites and ten existing reservoir sites were studied.

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SITE CP-3101

Location: On Danforth Brook about 400 feet upstream from Thresher Road in Hardwick, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°23'34" Longitude: 72°11'47"

Facilities Affected;

Facility	Elevation
Thresher Road	962

Geologic Conditions: Both abutments are glacial till underlain by schist bedrock. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emegency spillway location.

****

SITE CP-3102

Location: On Danforth Brook about 800 feet upstream from Thresher Road in Hardwick, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°23'28" Longitude: 72°11'32"

Facilities Affected:

Facility	Elevation
Jackson Road	985
Utility poles	985

Geologic Conditions: The right abutment is poorly graded sand and gravel with cobbles and boulders. The left abutment is glacial till underlain by schist bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. About 45% of the foundation is covered with boulders. Waterholding capabilities appear to be poor. Leakage is expected through the sand and gravel on the right abutment. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cut-off through the sand and gravel on the right abutment.

****

SITE CP-3103

Location: On Muddy Brook about 4000 feet downstream from Petersham Road in Hardwick, Mass.

Petersham, Mass. USGS quadrangle

Latitude: 42°22'43" Longitude: 72°12'57"

Facilities Affected: None below elevation 730.

Geologic Conditions: The left abutment is thin discontinuous glacial till underlain by bedrock. The right abutment is glacial till. The bedrock is slightly jointed in outcrops. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3104

Location: On Muddy Brook about 4350 feet downstream from Greenwich Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°21'38" Longitude: 72°13'55"

Facilities Affected: None below elevation 565.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3105

Location: On Muddy Brook at Gaudet and Muddy Brook Roads in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°21'22" Longitude: 72°13'54"

Facilities Affected:

Facility	Elevation
Muddy Brook Road	492
Gaudet Road	492

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3106

Location: On an unnamed brook about 700 feet downstream from Muddy Brook Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°21'12" Longitude: 72°13'15"

Facilities Affected:	Facility	Elevation
	Muddy Brook Road	700

Geologic Conditions: The right abutment is a poorly graded sand and gravel terrace. The left abutment is englacial drift. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. About 30% of the foundation is covered with boulders. Waterholding capabilities appear to be fair. Leakage is expected through the right abutment. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the right abutment.

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SITE CP-3107

Location: On Muddy Brook about 2900 feet upstream from Patrill Hollow Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°20'49" Longitude: 72°13'50"

Facilities Affected:	Facility	Elevation
	Muddy Brook Road	492

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3108

Location: On Muddy Brook about 3600 feet downstream from Patrill Hollow Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°19'47" Longitude: 72°14'09"

Facilities Affected:

Facility	Elevation
Muddy Brook Road	492
Cottage	485
Patrill Hollow Road	475

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3109

Location: On Canterbury Brook about 350 feet upstream from Greenwich Plain Road in Hardwick, Mass.

Windsor Dam, Mass. USGS quadrangle

Latitude: 42°19'19" Longitude: 72°15'30"

Facilities Affected:

Facility	Elevation
Cottage	609
Fisk Road	594
Utility poles	594

Geologic Conditions: The right abutment is glacial till. The left abutment is poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. If the site is developed to elevation 600, a dike will be required east of the reservoir. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the left abutment.

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SITE CP-3110

Location: On Canterbury Brook at Greenwich Plain Road in Hardwick, Mass.

Windsor Dam, Mass. USGS quadrangle

Latitude: 42°19'12" Longitude: 72°15'25"

Facilities Affected:

Facility	Elevation
Cottage	609
Fisk Road, utility poles	594
Greenwich Plain Road	590

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location. If the site is developed to elevation 600, a dike will be required northeast of the reservoir.

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SITE CP-3111

Location: On Newton Brook about 900 feet upstream from Ware-Greenwich Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°19'06" Longitude: 72°14'59"

Facilities Affected:

Facility	Elevation
Thayer Road	555
Greenwich Plain Road	540
Trailer and garage	530

Geologic Conditions: The right abutment is glacial till with poorly graded sand and gravel outwash at the toe of the abutment. The left abutment is glacial till underlain by schist bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3112

Location: On an unnamed brook about 700 feet upstream from Turkey Street in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°19'10" Longitude: 72°13'44"

Facilities Affected: None below elevation 660.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location. If the site is developed to elevation 655, a dike will be required south of the reservoir.

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SITE CP-3113

Location: On Flat Brook about 2200 feet upstream from Cummings Road in Ware, Mass.

Windsor Dam, Mass. USGS quadrangle

Latitude: 42°17'07" Longitude: 72°16'20"

Facilities Affected:

Facility	Elevation
High tension towers	565
Utility poles	565

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. This site was also identified as a potential site (M13C-3) in the Comprehensive Study of the Connecticut River Basin.

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SITE CP-3114

Location: On Muddy Brook about 400 feet upstream from North Street in Ware, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°16'32" Longitude: 72°14'37"

Facilities Affected:

Facility	Elevation
High tension towers	419
Utility poles	419

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash with cobbles. Depth to bedrock in the foundation is estimated to be from 40 to 50 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3115

Location: On Flat Brook about 2500 feet upstream from Route 32 in Ware, Mass.

Windsor Dam, Mass. USGS quadrangle

Latitude: 42°15'16" Longitude: 72°16'07"

Facilities Affected: None below elevation 500.

Geologic Conditions: The right abutment is glacial till. The left abutment is poorly graded sand and gravel outwash. Granitic bedrock is exposed in outcrops in the stream. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the left abutment.

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SITE CP-3117

Location: On an unnamed brook about 200 feet upstream from Gates Road in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°11'25" Longitude: 72°18'17"

Facilities Affected:

Facility	Elevation
Gates Road	410
Utility poles	410

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 45 to 55 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3118

Location: On an unnamed brook about 1850 feet upstream from Gates Road in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°11'15" Longitude: 72°18'35"

Facilities Affected:

Facility	Elevation
High tension towers	440

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3119
(Patrill Hollow Pond)

Location: On Muddy Brook near Patrill Hollow Road in Hardwick, Mass.

Ware, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
485	20	6	5575	8.7

Potential for Expansion: It appears that the site could be expanded to a 200 acre pool with a 60 foot high dam.

Remarks: The dam is a 45 foot long concrete structure with flashboards to control the water level. The pond has a 24" diameter drain.

Ownership and Use: The site is owned by Mr. Mixter and is used for wildlife preservation.

SITE CP-3120
(Pepper Mill Pond)

Location: On Beaver Brook north of Route 9 in Ware, Mass.

Winsor Dam, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
405	10	10	1700	2.7

Potential for Expansion: Expansion is severely limited by the Route 9 highway embankment and the Goodnough Dike at Quabbin Reservoir.

Remarks: The dam is an earth-fill structure. The principal spillway, a combination drop chute fitted with flashboards, has an 8 foot weir length and a 3 foot weir depth. The emergency spillway, located to the left of the principal spillway, is a concrete channel. The concrete in the emergency spillway channel is badly cracked. There is heavy brush growing on the downstream slope of the dam.

Ownership and Use: The site is owned by the Metropolitan District Commission and is used primarily for fishing.

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SITE CP-3122 (Beaver Lake)

Location: On Beaver Brook at Babcock Tavern Road in Ware, Mass.

Winsor Dam, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
284	155	13	3550	5.6

Potential for Expansion: Limited; many roads, houses, and cottages would be affected.

Remarks: The dam is a 130 foot long earth-fill structure with a 14 foot wide concrete drop spillway, fitted with flashboards. Babcock Tavern Road is bridged over the outlet channel and abuts the rest of the dam.

Ownership and Use: The site is owned by Beaver Lake, Inc. and is used primarily for recreation.

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SITE CP-3123 (Ware Industries Dam)

Location: On the Ware River north of the Route 9 bridge in Ware, Mass.

Ware, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		20	106,600	166.6

Potential for Expansion: Limited; houses line the left abutment where the present water level approaches the bank elevation.

Remarks: The dam is a 100 foot long concrete weir structure. There is a catwalk on the right abutment which leads to a control house. Flow from the upstream side of the dam is diverted through the control house to a canal which passes beneath Route 9 to a factory complex.

Ownership and Use: The site is owned by Ware Industries, Inc. and is used for industrial purposes.

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SITE CP-3124
(Pattaquatic Pond)

Location: On an unnamed short tributary to the Ware River at Camp Ramah Road in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	(Sq. Mi.)
363	20	4		

Potential for Expansion: Limited; Camp Ramah surrounds the Pond.

Remarks: The dam is a 200 foot long earth-fill structure which serves as Camp Ramah Road. The spillway is a concrete drop structure with stop logs. Both the upstream and downstream slopes have trees and brush growing on them.

Ownerhip and Use: The site is owned by Camp Ramah, Inc. and is used primarily for recreation. This is an enlarged great pond open to public use.

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SITE CP-3125
(Forest Lake)

Location: On an unnamed short tributary to the Ware River near River Street in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
369	50	5	2250	3.5

Potential for Expansion: Limited; houses along the shore and the State Fish Hatchery located upstream would be affected.

Remarks: The dam is a 30 foot long field stone structure with one foot high flashboards. There is leakage through the flashboards and the dam itself.

Ownership and Use: The site is owned by Forest Lake Park Co., Inc. and is used primarily for recreation. This is an enlarged great pond open to public use.

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SITE CP-3126
(Diamond National Lower Dam)

Location: On the Ware River near Main Street in the village of Thorndike, Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		20	137,900	215.5

Potential for Expansion: Very limited; new houses line both banks of the river.

Remarks: The dam is a 125 foot long concrete weir structure. There is a canal sluiceway in the right abutment which diverts water to the Diamond National plant. Masonry on the left sidewall is crumbling.

Ownership and Use: The site is owned by the Diamond National Corporation and is used for industrial purposes.

SITE CP-3127
(Diamond National Upper Dam)

Location: On the Ware River near Pleasant Street in the village of Thorndike, Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		20	137,600	215.0

Potential for Expansion: Limited; the Penn-Central Railroad is about 10 feet above the present water level. The steep topography limits any significant increase in surface area.

Remarks: The dam is a 125 foot long concrete weir structure. A canal and gatehouse on the right abutment divert water to the Diamond National plant.

Ownership and Use: The site is owned by the Diamond National Corporation and is used for industrial purposes.

SITE CP-3128
(Thompson Lake)

Location: On an unnamed brook near Smith Street in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
564	30	8	250	0.4

Potential for Expansion: Limited; many houses line the shore. The small drainage area also limits the potential for expansion.

Remarks: The dam is a 32 foot long stone masonry structure with a concrete chute. The principal spillway is a 4 foot wide notch about 1.5 feet below the emergency spillway, which is the top of the dam. There are some cracks along the inlet and crest of the principal spillway. Concrete is spalling on the edges of the principal and emergency spillways.

Ownership and Use: The site is owned by the Lake Thompson Civic Association, Inc. and is used primarily for recreation.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV +TYPE (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-3101 DA= 1.56 SQ MI = 998 AC USGS QUAD-PETERSHAM LATITUDE 42-23-34 LONGITUDE 72-11-47																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 311 CFS																
954.6	0	0.0		4		6.6	966.0 E	345	4.1	770	968.5	122	972.3	24	35	*****
961.8	70	0.8	3840	31	8630	13.7	964.3 E	199	2.4	1350	966.5	98	968.4	20	23	0.20
964.3	189	2.3	1790	65	5150	16.2	966.8 E	411	4.9	820	969.0	130	971.5	23	32	0.40
965.8	308	3.6	1190	86	4220	17.7	968.3 E	577	6.8	630	970.0	143	971.8	24	33	0.55
967.5	473	5.6	1050	109	4550	19.5	967.5 T	486	5.8	1020	970.0	143	972.0	24	34	0.70
SITE-CP-3102 DA= 1.15 SQ MI = 736 AC USGS QUAD-PETERSHAM LATITUDE 42-23-28 LONGITUDE 72-11-32																
SITE RATING (2) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 273 CFS																
972.9	0	0.0		9		0.8	979.0 E	255	4.1	350	981.3	111	984.3	12	2	*****
976.5	100	1.6	1270	46	277C	4.6	979.0 E	256	4.1	500	981.4	115	983.5	12	2	0.24
979.1	255	4.1	660	72	231C	7.1	981.6 E	501	8.2	330	983.3	160	985.8	14	3	0.43
980.9	411	6.6	520	103	208C	8.8	983.4 E	751	12.2	290	984.3	184	986.8	15	3	0.57
982.5	601	9.8	430	141	182C	10.5	985.0 E	1041	17.0	250	985.3	208	987.8	16	4	0.71
SITE-CP-3103 DA= 3.18 SQ MI = 2035 AC USGS QUAD-PETERSHAM LATITUDE 42-22-43 LONGITUDE 72-12-57																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.10 IN, PEAK FLOW = 607 CFS																
677.7	0	0.0		11		3.6	693.7 E	704	4.1	500	696.0	78	698.4	24	54	*****
682.3	100	0.6	2340	28	827C	8.3	684.8 E	202	1.2	1160	687.3	50	688.8	15	17	0.32
695.2	790	4.6	680	75	710C	21.2	697.7 E	1012	6.0	530	700.0	89	701.5	28	74	1.28
709.5	2170	12.8	470	119	857C	35.5	712.0 E	2506	14.7	410	714.5	132	716.3	42	211	2.25
720.0	3550	20.9	410	145	999C	46.0	722.5 E	3957	23.2	370	724.9	158	726.9	53	366	2.76
722.5	3928	23.2	400	152	1029C	48.5	725.0 E	4336	25.6	360	727.5	165	729.5	56	415	2.84

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	CHANCE (MGD)
SITE-CP-3104 DA= 5.94 SQ MI = 3802 AC — USGS QUAD-WARE — LATITUDE 42-21-38 LONGITUDE 72-13-55																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1049 CFS																
508.0	0	0.0		12		8.0	539.2 E	1474	4.6	470	541.5	90	544.9	45	192	*****
513.7	100	0.3	4050	24	1696C	13.7	513.7 T	148	0.5	2740	522.5	44	525.7	26	51	0.37
529.2	733	2.3	860	55	1135C	29.2	531.7 E	931	2.9	680	534.0	69	536.9	37	118	1.55
545.4	2000	6.3	540	102	1059C	45.4	547.9 E	2312	7.3	470	550.3	117	553.0	53	291	2.86
557.5	3506	11.1	510	153	1161C	57.5	557.5 T	3553	11.2	500	560.0	165	562.3	62	448	3.91
SITE-CP-3105 DA= 6.51 SQ MI = 4166 AC — USGS QUAD-WARE — LATITUDE 42-21-22 LONGITUDE 72-13-54																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1149 CFS																
497.5	0	0.0		13		7.5	527.9 E	1617	4.6	280	530.3	97	533.7	44	91	*****
502.5	100	0.3	2830	25	1149C	12.6	502.5 T	152	0.4	1860	511.5	49	514.5	25	20	0.37
520.5	966	2.8	510	72	678C	30.5	523.0 E	1206	3.5	400	525.5	84	528.3	38	63	1.90
538.5	2697	7.8	320	125	691C	48.5	541.0 E	3078	8.8	280	543.4	143	546.0	56	181	3.59
552.5	4822	13.8	260	183	681C	62.5	555.0 E	5347	15.3	230	557.4	213	559.9	70	338	4.81
SITE-CP-3106 DA= 0.48 SQ MI = 307 AC — USGS QUAD-WARE — LATITUDE 42-21-12 LONGITUDE 72-13-15																
SITE RATING (2) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 143 CFS																
693.3	0	0.0		2		3.3	705.8 E	106	4.1	1930	708.0	24	711.0	21	29	*****
705.7	100	3.9	2790	18	1512C	15.7	708.2 E	157	6.1	1780	710.5	29	713.0	23	37	0.18
707.8	143	5.6	2330	23	1463C	17.7	710.3 E	210	8.2	1590	712.7	33	715.3	25	49	0.21
709.5	187	7.3	2050	27	1438C	19.5	712.0 E	263	10.3	1460	714.3	35	716.8	27	59	0.25
712.5	273	10.7	1780	32	1513C	22.5	715.0 E	363	14.2	1340	717.0	40	719.4	29	82	0.31

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER	DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV + TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3107 DA= 7.81 SQ MI = 4998 AC USGS QUAD-WARE LATITUDE 42-20-49 LONGITUDE 72-13-50																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1379 CFS																
488.2	0	0.0		30		3.3	510.9 E	1991	4.8	210	513.3	146	517.0	32	61	*****
490.7	100	0.2	2490	49	5070	5.8	493.2 E	302	0.7	820	495.7	70	498.7	14	10	0.39
506.5	1380	3.3	360	115	4390	21.5	509.0 E	1743	4.1	290	511.5	137	514.3	29	50	2.55
523.2	3940	9.5	230	191	4720	38.2	531.7 E	5779	13.8	160	534.0	241	537.8	53	189	4.77
535.0	6500	15.6	180	245	4900	50.0	535.0 T	6562	15.7	180	539.9	271	543.0	58	236	6.11
537.5	7119	17.1	210	258	5900	52.5	537.5 T	7181	17.2	210	540.0	272	542.5	58	231	6.32
SITE-CP-3108 DA= 9.52 SQ MI = 6093 AC USGS QUAD-WARE LATITUDE 42-19-47 LONGITUDE 72-14-09																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1641 CFS																
476.4	0	0.0		23		6.4	497.2 E	2557	5.0	250	499.5	263	503.7	34	124	*****
479.7	100	0.2	3590	36	10000	9.8	482.2 E	313	0.6	1150	484.7	93	487.7	18	24	0.41
492.2	1461	2.9	650	180	5230	22.2	502.7 E	4022	7.8	230	505.0	316	509.5	40	185	2.84
503.5	4184	8.2	300	300	4180	33.5	510.0 E	6406	12.6	200	512.4	384	516.4	46	276	5.43
512.5	7286	14.2	220	385	4180	42.5	512.5 T	7362	14.5	220	517.0	425	519.9	50	331	7.17
SITE-CP-3109 DA= 0.73 SQ MI = 467 AC USGS QUAD-WINDSOR DAM LATITUDE 42-19-19 LONGITUDE 72-15-30																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 218 CFS																
592.0	0	0.0		4		2.0	602.0 E	162	4.1	860	604.5	29	607.5	18	16	*****
599.8	100	2.5	1560	22	7230	9.8	602.3 E	165	4.1	940	604.7	29	606.5	16	13	0.20
603.2	183	4.6	1190	27	8080	13.2	605.7 E	261	6.6	840	608.2	35	610.4	20	26	0.30
608.5	350	9.0	1090	35	10760	18.5	611.0 E	449	11.5	850	613.5	40	615.9	26	62	0.43
612.5	499	12.8	1080	39	13630	22.5	615.0 E	606	15.6	890	617.3	43	619.7	30	100	0.52

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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER	DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3110 DA= 0.87 SQ MI = 557 AC USGS QUAD-WINDSOR DAM LATITUDE 42-19-12 LONGITUDE 72-15-25																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 259 CFS																
585.4	0	0.0		2		5.4	598.9 E	193	4.1	840	601.0	38	604.0	24	21	*****
595.9	100	2.2	1800	23	7680	15.8	598.4 E	177	3.8	1020	600.8	38	602.5	23	18	0.21
600.5	244	5.3	1040	38	6780	20.6	603.0 E	350	7.5	730	605.4	45	607.5	28	32	0.37
607.3	533	11.5	870	48	9590	27.2	609.8 E	665	14.2	690	612.0	58	614.5	35	82	0.58
612.5	810	17.5	870	59	11950	32.5	615.0 E	973	21.0	730	617.0	72	619.7	40	150	0.71
SITE-CP-3111 DA= 2.31 SQ MI = 1478 AC USGS QUAD-WARE LATITUDE 42-19-06 LONGITUDE 72-14-59																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 689 CFS																
512.5	0	0.0		5		7.5	536.0 E	511	4.1	1020	538.4	45	541.0	36	114	*****
521.8	100	0.8	5430	17	32630	16.7	521.8 T	118	1.0	4580	532.7	34	535.5	31	77	0.29
534.2	421	3.4	1830	37	20820	29.2	544.7 E	937	7.6	820	547.0	63	549.8	45	196	0.77
547.0	1062	8.6	1010	63	16910	42.0	553.5 E	1539	12.5	700	556.0	79	558.5	54	308	1.35
556.0	1704	13.7	840	79	18130	51.0	556.0 T	1723	14.0	830	560.0	84	562.2	57	364	1.70
557.5	1820	14.7	880	81	19790	52.5	557.5 T	1839	14.8	870	560.0	84	562.0	57	360	1.76
SITE-CP-3112 DA= 0.65 SQ MI = 416 AC USGS QUAD-WARE LATITUDE 42-19-10 LONGITUDE 72-13-44																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 194 CFS																
643.9	0	0.0		4		1.9	653.2 E	144	4.1	1230	655.5	29	658.3	16	25	*****
650.2	73	2.0	2460	19	9540	8.2	652.7 E	132	3.8	1360	655.0	29	657.0	15	20	0.16
652.0	111	3.2	1980	23	9750	10.1	654.5 E	179	5.1	1230	656.9	32	659.0	17	28	0.21
652.5	121	3.5	1890	23	9800	10.5	655.0 E	192	5.5	1200	657.3	33	659.4	17	30	0.21

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3113	DA= 3.04 SQ MI = 1946 AC						USGS QUAD-WINDSOR DAM					LATITUDE 42-17-07		LONGITUDE 72-16-20			
SITE RATING (3)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 8.00 IN, PEAK FLOW = 906 CFS					
565.0	0	0.0		16		2.0	575.5	E	673	4.1	260	577.9	144	581.0	18	13	*****
568.4	100	0.6	2030	43	4750	5.4	576.9	E	854	5.3	240	579.4	160	582.8	20	16	0.31
576.4	759	4.6	370	127	2220	13.3	580.9	E	1465	9.0	190	583.3	192	586.5	24	23	1.23
584.3	2077	12.8	190	199	1990	21.2	586.8	E	2624	16.2	150	589.3	236	592.3	29	40	2.15
592.5	3952	24.4	140	256	2170	29.5	595.0	E	4637	28.5	120	596.9	283	599.9	37	71	2.76
SITE-CP-3114	DA= 17.97 SQ MI = 11501 AC						USGS QUAD-WARE					LATITUDE 42-16-32		LONGITUDE 72-14-37			
SITE RATING (3)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 8.00 IN, PEAK FLOW = 2281 CFS					
428.0	110	0.1	3140	32	10760	13.0	430.5	E	345	0.4	1000	433.0	54	436.5	21	19	0.49
439.0	765	0.8	720	90	6120	24.1	441.5	E	1151	1.2	480	444.0	122	447.4	32	54	2.26
449.7	2074	2.2	390	159	5050	34.7	452.2	E	2634	2.7	300	454.7	190	457.7	43	111	4.51
456.9	3383	3.5	410	204	6880	41.9	456.9	T	3526	3.6	400	460.0	223	462.7	48	147	6.11
SITE-CP-3115	DA= 6.20 SQ MI = 3968 AC						USGS QUAD-WINDSOR DAM					LATITUDE 42-15-16		LONGITUDE 72-16-07			
SITE RATING (2)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 8.00 IN, PEAK FLOW = 1279 CFS					
487.7	175	0.5	3470	28	21850	27.7	487.7	T	225	0.7	2700	498.7	48	501.4	41	68	0.57
490.7	273	0.8	2310	34	18290	30.7	490.7	T	322	1.0	1950	499.7	50	502.5	43	73	0.80
493.5	370	1.1	1770	39	16780	33.5	493.5	T	420	1.2	1560	500.0	50	502.2	42	72	0.98
495.7	467	1.4	1570	43	16970	35.8	495.7	T	517	1.6	1420	500.0	50	501.9	42	70	1.17

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-WARE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3117	DA= 2.00 SQ MI = 1280 AC						USGS QUAD-PALMER					LATITUDE 42-11-25 LONGITUDE 72-18-17					
SITE RATING (3)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.90 IN, PEAK FLOW = 589 CFS					
409.9	0	0.0		6		4.9	429.2	E	443	4.1	780	431.7	47	434.7	30	65	*****
419.0	120	1.1	3330	20	2032C	14.1	431.5	E	545	5.1	740	434.0	53	436.7	32	75	0.32
422.4	199	1.9	2150	26	1640C	17.4	432.9	E	607	5.6	710	435.2	56	438.0	33	81	0.46
427.4	355	3.3	1370	37	1328C	22.4	435.9	E	768	7.1	640	438.4	65	441.2	36	98	0.66
431.2	512	4.8	1010	45	1142C	26.2	437.7	E	878	8.2	590	440.0	69	442.5	38	106	0.82
SITE-CP-3118	DA= 0.57 SQ MI = 365 AC						USGS QUAD-PALMER					LATITUDE 42-11-15 LONGITUDE 72-18-35					
SITE RATING (3)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.90 IN, PEAK FLOW = 168 CFS					
430.9	0	0.0		2		5.9	444.4	E	126	4.1	1120	446.7	21	449.5	25	14	*****
439.2	51	1.7	2580	10	1271C	14.2	441.7	E	85	2.8	1540	444.2	17	445.7	21	9	0.12
440.5	64	2.0	2170	12	1180C	15.6	443.0	E	103	3.4	1350	445.4	19	447.0	22	11	0.14
441.5	78	2.5	1880	13	10900	16.6	444.0	E	121	4.0	1210	446.5	21	448.0	23	12	0.16
442.5	91	3.0	1700	15	1046C	17.5	445.0	E	136	4.5	1130	447.4	22	449.0	24	13	0.17

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LEGEND

WATERSHED BOUNDARY

ORAINAGE AREA ABOVE STRUCTURE

POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE

EXISTING POND OR RESERVOIR

N

3101
3102
3103
3104
3105
3106
3107
3108
3109
3110
3111
3112
3113
3114
3115
3117
3118
3119
3120
3121
3122
3123
3124
3125
3126
3127
3128

SOURCE: USGS QUAD SHEETS
Palmer–1969
Petersham–1969
Ware–1969
Worren–1969
Winsor Dam–1967

WARE RIVER (CP-31)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

USDA-SCS-HYATTSVILLE, MD 1975

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-32, Upper Quaboag River

The Upper Quaboag River subwatershed covers 94,600 acres in the Towns of Brookfield, East Brookfield, Charlton, Leicester, New Braintree, North Brookfield, Oakham, Palmer, Paxton, Rutland, Spencer, Sturbridge, and Warren, (Worcester County) and Ware (Hampshire County). There is a U.S. Geological Survey stream gaging station on the Sevenmile River in Spencer.

The Upper Quaboag River Watershed is currently in the operations phase of a Watershed Protection and Flood Prevention Project under Public Law 566. Structural measures include two single purpose floodwater retarding dams, seven multi-purpose reservoirs and a floodwall. Four of the dams and the floodwall have been constructed. The five remaining structures are being planned or designed. Data for these PL-566 sites are included in this report.

The Quaboag River originates in Spencer and flows generally westerly through East Brookfield, Brookfield, West Brookfield and Warren. Major tributaries are: Sucker Brook, which originates in New Braintree and flows southwesterly to the confluence in West Brookfield; Fivemile River, which originates in Oakham and flows southerly to the confluence in East Brookfield; and Sevenmile River, which originates in Oakham and flows southwesterly to the confluence in Spencer. Elevations range from a high of about 1220 in Paxton to a low of about 450 in Palmer. Geology of the subwatershed is characterized as gneiss, schist, or granitic bedrock overlain by 10 to 35 feet of outwash sand and gravel, glacial till or englacial drift.

Forty-eight potential reservoir sites and twenty-six existing reservoir sites were studied. Summary Data for Potential Upstream Reservoir Sites are included for forty-four sites that met study criteria. Quaboag Pond and Quacumquasit Pond were not included under existing reservoir sites because they are not controlled by man-made structures.

SITE CP-3201

Location: On Maynard Brook about 1850 feet upstream from Lincoln Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°20'11" Longitude: 72°03'08"

Facilities Affected: None below elevation 950.

Geologic Conditions: Both abutments are silty sand and gravel and englacial drift with cobbles and boulders. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be fair. There may be leakage through the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3202

Location: On Maynard Brook about 2100 feet upstream from North Brookfield Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°19'42" Longitude: 72°02'57"

Facilities Affected: None below elevation 875.

Geologic Conditions: Both abutments are englacial drift. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3203

Location: On Fivemile River about 2100 feet upstream from South Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°19'07" Longitude: 72°02'57"

Facilities Affected: None below elevation 770.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 30 to 35 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. There is a breached dam at the site.

****

SITE CP-3204

Location: On the main tributary flowing into the north end of Browning Pond about 800 feet upstream of the pond in Oakham, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°19'29" Longitude: 71°59'54"

Facilities Affected:

Facility	Elevation
Oakham State Forest	810
Three Adirondack shelters	800
High tension towers	785
Two Adirondack shelters	780
Boy Scout Camp roads	760

Geologic Conditions: The left abutment is a kame terrace with about 40% coarse gravel and boulders. The right abutment is glacial till. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: The Mohegan Council of the Boy Scouts of America owns the majority of the site.

****

SITE CP-3205

Location: On an unnamed stream about 2500 feet upstream from Caruth Brook. The stream junction with Caruth Brook is about 900 feet upstream from Nanigan Road in Paxton, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°19'29" Longitude: 71°58'09"

Facilities Affected: None below elevation 950.

Geologic Conditions: Both abutments are poorly graded sand and gravel. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3206

Location: On Caruth Brook about 1600 feet upstream from Nanigan Road in Paxton, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°19'14" Longitude: 71°58'15"

Facilities Affected: None below elevation 960.

Geologic Conditions: The left abutment is poorly graded sand and gravel outwash high on the slope and englacial drift at the toe. The right abutment is either englacial drift or glacial till with 30% cobbles and boulders. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be fair. Leakage is expected through the sand and gravel on the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cut-off through the sand and gravel on the right abutment.

****

SITE CP-3207

Location: On the brook which flows from Eames Pond to Thompsons Pond; 700 feet upstream from Thompsons Pond in Paxton, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°18'16" Longitude: 71°57'54"

Facilities Affected:

Facility	Elevation
Breghan Road	924
Barn	917
Black Hill Road	915
Route 31	907

Geologic Conditions: Both abutments are glacial till with many large boulders at the surface. Depth to bedrock in the foundation is estimated to be from 5 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-3208

Location: On an unnamed brook about 2300 feet upstream from Marshall Street (near Hill Street) in Paxton, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°17'40" Longitude: 71°56'08"

Facilities Affected:

Facility	Elevation
Marshall Road	1034
Utility poles	1034

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The natural saddle to the west of the right abutment is recommended for the emergency spillway location.

****

SITE CP-3209

Location: On Sucker Brook about 475 feet upstream from Utley Road in New Braintree, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°18'57" Longitude: 72°06'32"

Facilities Affected:

Facility	Elevation
Barre Road	915
Utility poles	915

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be over 40 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3210

Location: On the Sevenmile River about 650 feet upstream from the private road that runs east from Saint Joseph's Abbey in Spencer, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°17'44" Longitude: 72°00'14"

Facilities Affected:

Facility	Elevation
Browning Pond	748

Geologic Conditions: Both abutments are poorly graded sand and gravel. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: A portion of the pool extends into the Oakham State Forest.

****

SITE CP-3211

Location: On an unnamed stream about 3100 feet upstream from a dirt road in Leicester, Mass. The dirt road intersects Donnelly Cross Road about 550 feet northeast of Moose Hill Road.

Paxton, Mass. USGS quadrangle

Latitude: 42°16'50" Longitude: 71°56'53"

Facilities Affected:

Facility	Elevation
House	1010

Geologic Conditions: The left abutment is thin glacial till underlain by bedrock. The right abutment is thin discontinuous englacial drift. There is bedrock outcropping in the stream. Rock is moderately fractured. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: The site lies within the Moose Hill Wildlife Management Area owned by the Massachusetts Division of Fisheries and Game.

****

SITE CP-3215

Location: On the Sevenmile River about 4100 feet upstream from Cooney Road in Spencer, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°16'30" Longitude: 72°00'16"

Facilities Affected:

Facility	Elevation
House	675

SITE CP-3215 (Cont'd)

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be required at this site.

****

SITE CP-3217

Location: On Horsepond Brook about 2200 feet downstream from Doane Pond in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°16'59" Longitude: 72°03'53"

Facilities Affected: None below elevation 860.

Geologic Conditions: The left abutment is englacial drift and probably shallow to bedrock. The right abutment is gneiss bedrock overlain by thin discontinuous englacial drift. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be fair. There may be leakage through the sand and gravel on the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel on the left abutment.

****

SITE CP-3218

Location: On Mill Brook about 900 feet upstream from Barr Bridge Road in New Braintree, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°17'23" Longitude: 72°09'36"

Facilities Affected:

Facility	Elevation
House and barn	685
Barn	678

Geologic Conditions: The left abutment is sand and gravel and is an old gravel pit. The right abutment is glacial till high on the slope and outwash sand and gravel at the toe. Depth to bedrock in the foundation is estimated to be over 40 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-3219

Location: On Mill Brook about 3700 feet upstream from Barr Bridge Road in New Braintree, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°17'44" Longitude: 72°09'17"

Facilities Affected:

Facility	Elevation
Bridge Road	685
House	685
Barn	678
Gilbertville Road	678
Utility poles	678

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-3220

Location: On Meadow Brook about 400 feet upstream from Barr Bridge Road in New Braintree, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°17'51" Longitude: 72°08'33"

Facilities Affected:

Facility	Elevation
Brookfield Road	688
Utility poles	688

Geologic Conditions: The left abutment is poorly graded outwash sand and gravel with glacial till high on the slope. The right abutment is poorly graded outwash sand and gravel. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at the site.

****

SITE CP-3222

Location: On an unnamed stream running parallel to Downey Road about 2500 feet upstream from Bigelow Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°16'44" Longitude: 72°06'00"

Facilities Affected: None below elevation 840.

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3223

Location: On Coy[illegible] Brook about 1500 feet upstream from Tucker Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°15'49" Longitude: 72°06'26"

Facilities Affected:

Facility	Elevation
Bigelow Road	730
Waite Corner Road	730
Utility poles	730
House, barn	730

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Water-holding capabilities appear to be fair. There may be leakage through the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-3224

Location: On Forget-Me-Not Brook about 350 feet upstream from Bates Street in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°15'43" Longitude: 72°04'42"

Facilities Affected:

Facility	Elevation
House	847
Elm Street	845

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Water-holding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3228

Location: On an unnamed stream about 4100 feet upstream from Hunt Road in West Brookfield, Mass. The stream passes under the road about 650 feet north of North Brookfield Road.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°15'24" Longitude: 72°07'17"

Facilities Affected:

Facility	Elevation
High tension towers	730

Geologic Conditions: The left abutment is poorly graded englacial drift and is shallow to bedrock. The right abutment is poorly graded sand and gravel outwash with glacial till high on the slope. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be fair. Leakage is expected through both abutments and the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the foundation to bedrock.

****

SITE CP-3229

Location: On Mill Brook about 2200 feet upstream from Shea Road in West Brookfield, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°16'06" Longitude: 72°09'34"

Facilities Affected:

Facility	Elevation
Bridge Road	685
Pierce Road	685
Barn	678
House	665
Two houses, garage	660
Shed	660
Two houses, barn	650
Sawmill, 2 barns, 2 silos, garage	640
House	635
Barn, silo	630
Two chicken houses	620
Wickaboag Road	620
Utility poles	620

SITE CP-3229 (continued)

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3230

Location: On an unnamed stream about 1000 feet upstream from Shore Road in North Brookfield, Mass.. The stream passes under the road about 550 feet west of Brookfield Road.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°14'32" Longitude: 72°03'23"

Facilities Affected: None below elevation 675.

Geologic Conditions: Both abutments are glacial till with about 15% cobbles and boulders. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3231

Location: On Sucker Brook about 1200 feet upstream from Mill Brook in West Brookfield, Mass.

Ware, Mass. USGS quadrangle

Latitude: 42°15'30" Longitude: 72°09'12"

Facilities Affected:

Facility	Elevation
Dirt road	605
Utility poles	605

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 30 to 35 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3232

Location: On Dunn Brook about 450 feet upstream from Slab City Road in North Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°14'01" Longitude: 72°04'24"

Facilities Affected:

Facility	Elevation
Dairy Farm	655
House, 2 barns	652
House	650
East Brookfield Road	648
Town Farm Road	645

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3233

Location: On an unnamed stream about 1400 feet downstream from Howe Street and about 600 feet upstream from the Penn-Central Railroad in East Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°13'26" Longitude: 72°02'05"

Facilities Affected:

Facility	Elevation
Howe Street	625
Utility poles	625

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3234

Location: On the Cranberry River about 700 feet upstream from the Penn-Central Railroad in Spencer, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°13'23" Longitude: 72°00'19"

Facilities Affected:

Facility	Elevation
Garage	690
Garage	680
House	673
House	670
Shed	665
Cranberry Road	660
Howe Recreation Area	660
Howe Pond	660
Storage Shed	660

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

SITE CP-3234 (continued)

Engineering Notes: The right abutment is recommended for the emergency spillway location.

Public Ownership: Part of the reservoir site is located in the Spencer State Forest.

****

SITE CP-3235

Location: On Coys Brook about 500 feet downstream from Route 9 in West Brookfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°13'58" Longitude: 72°08'10"

Facilities Affected:

Facility	Elevation
House	617
Route 67	616
Apartments, house	615
Route 9	603
Foster Road	603
Utility poles	603

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 35 to 45 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-3236

Location: On an unnamed tributary to the Cranberry River about 1100 feet upstream from the confluence in Spencer, Mass.. The confluence is about 550 feet upstream from Howe Pond.

Leicester, Mass. USGS quadrangle

Latitude: 42°12'33" Longitude: 71°59'42"

Facilities Affected: None below elevation 800.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash and are probably shallow to glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel on both abutments.

Public Ownership: A small portion of the drainage area is located within the Spencer State Forest.

****

SITE CP-3237

Location: On the Cranberry River about 1000 feet upstream from Gauthier Road in Spencer, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°12'16" Longitude: 72°00'04"

Facilities Affected: None below elevation 760.

Geologic Conditions: The right abutment is poorly graded outwash sand and gravel. The left abutment is englacial drift. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3238

Location: On Sullivan Brook about 100 feet downstream from Old West Brookfield Road in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°13'36" Longitude: 72°10'52"

Facilities Affected:

Facility	Elevation
Cutler Road	643
Barn	640
Pump house	630
Garage	630
Utility poles	630
Old West Brookfield Road	625

Geologic Conditions: The left abutment is thin discontinuous englacial drift underlain by bedrock. The right abutment is glacial till with schist bedrock outcrops high on the slope of the left abutment. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3239

Location: On Willow Brook about 300 feet upstream from Brookfield Road in West Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°13'10" Longitude: 72°06'52"

Facilities Affected:

Facility	Elevation
Devils Elbow Road	612
Utility poles	602

Geologic Conditions: The left abutment is poorly graded outwash sand and gravel. The right abutment is glacial till. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3240

Location: On Great Brook about 725 feet upstream from Poduńk Street in East Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°12'09" Longitude: 72°02'54"

Facilities Affected:

Facility	Elevation
Overhead telephone cable	623
East Sturbridge Street	618
Two chicken houses	611
Two houses, warehouse	611
Utility poles	611

Geologic Conditions: Both abutments are granitic bedrock overlain by thin glacial drift. Rock outcrops are slightly fractured and there is a slide area on the left abutment. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-3241

Location: On Great Brook about 850 feet upstream from East Sturbridge Road in East Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°11'31" Longitude: 72°02'26"

Facilities Affected:

Facility	Elevation
Overhead telephone cable	623

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3242

Location: On Naultaug Brook about 6500 feet downstream from East Street in West Brookfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°13'03" Longitude: 72°09'36"

Facilities Affected:

Facility	Elevation
Davis Road	695

Geologic Conditions: The left abutment is poorly graded outwash sand and gravel. The right abutment is glacial till. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

****

SITE CP-3243

Location: On Naultaug Brook about 4500 feet downstream from East Street in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°12'45" Longitude: 72°09'34"

Facilities Affected:

Facility	Elevation
House, barn	735
Sharty Road	695
East Street	665
Utility poles	665

Geologic Conditions: Both abutments are glacial till and shallow to bedrock high on the slope with lacustrine silt deposits at the toe. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. There is a breached dam at the site.

****

SITE CP-3244

Location: On Salmon Brook about 1300 feet upstream from Long Hill Road in Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°12'10" Longitude: 72°07'29

Facilities Affected: None below elevation 650.

Geologic Conditions: Both abutments are glacial till and are probably shallow to bedrock. The foundation may consist of clay, silt, and stratified sand and gravel. Depth to bedrock in the foundation is estimated to be from 40 to 50 feet. Waterholding capabilities appear to be good. There could be some leakage through the gravel in the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3245

Location: On Salmon Brook about 3500 feet upstream from Long Hill Road in Brookfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°11'51" Longitude: 72°07'40"

Facilities Affected: None below elevation 680.

Geologic Conditions: The left abutment is poorly graded outwash sand and gravel. The right abutment is glacial till and is shallow to bedrock. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3246

Location: On O'Neil Brook at Town Farm Road in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°13'47" Longitude: 72°13'21"

Facilities Affected:

Facility	Elevation
House, barn, sheds	835
Town Farm Road	835
Utility poles	835
High tension towers	835

Geologic Conditions: Both abutments are glacial till and are probably shallow to bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3247

Location: On an unnamed stream about 1400 feet upstream from Rice Corner Cross Road in Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°10'33" Longitude: 72°05'07"

Facilities Affected: None below elevation 740.

Geologic Conditions: The left abutment is glacial till and is probably shallow to bedrock. The right abutment is glacial till or englacial drift and is shallow to bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3248

Location: On School Street Brook about 2650 feet upstream from Boston Road (Route 67) in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°13'07" Longitude: 72°14'30"

Facilities Affected: None below elevation 590.

Geologic Conditions: Both abutments are feldspar granite schist overlain by thin discontinuous englacial drift. The bedrock is slightly jointed. Grey schist outcrops in the foundation. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3249

Location: On O'Neil Brook about 1100 feet upstream from Old West Warren Road in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°13'10" Longitude: 72°13'23"

Facilities Affected:

Facility	Elevation
House, barn	680
House	670
O'Neil Road	645
Utility poles	645

Geologic Conditions: Both abutments are glacial till and are probably shallow to bedrock. Gneiss bedrock outcrops high on the right abutment. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3250

Location: On Cheney Brook about 700 feet upstream from Boston Road in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°13'02" Longitude: 72°12'21"

Facilities Affected: None below elevation 640.

Geologic Conditions: Both abutments are thin discontinuous glacial till underlain by bedrock. Grey schist outcrops high on both abutments. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3251

Location: On Naultaug Brook about 500 feet upstream from East Street in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°11'58" Longitude: 72°09'50"

Facilities Affected: None below elevation 850.

Geologic Conditions: The left abutment is gneiss bedrock. The right abutment is poorly graded outwash sand and gravel with glacial till high on the slope. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be fair to poor. Leakage is expected through the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

****

SITE CP-3252

Location: On an unnamed stream about 1350 feet upstream from the south end of the Comins Pond in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°11'52" Longitude: 72°11'56"

Facilities Affected:

Facility	Elevation
House	690

Geologic Conditions: Both abutments are poorly graded sand and gravel. Depth to bedrock in the foundation is estimated to be from 5 to 15 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3253

Location: On an unnamed stream running parallel to Warren-Brimfield Road about 2750 feet upstream from Crough Road in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°11'52" Longitude: 72°13'33"

Facilities Affected: None below elevation 680.

Geologic Conditions: The left abutment is poorly graded sand and gravel at the low elevations and bedrock at higher elevations. The right abutment is poorly graded sand with some gravel and glacial till; shallow to bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be fair. Leakage is expected through the sand and gravel on both abutments. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel on both abutments.

****

SITE CP-3254

Location: On Burr Brook about 2500 feet upstream from the Quaboag River in Brookfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°12'31" Longitude: 72°07'59"

Facilities Affected: None below elevation 655

Geologic Conditions: The left abutment is glacial till. The right abutment is poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be fair to poor. Leakage is expected through both abutments and the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: The site is within the Quaboag Wildlife Management Area owned by the Massachusetts Division of Fisheries and Game.

****

SITE CP-3255

Location: On North Brook about 850 feet downstream from Barnes Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°17'58" Longitude: 72°03'48"

Facilities Affected:

Facility	Elevation
House	910
House, 2 sheds	900
House, garage	900
Barnes Road, utility poles	879

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be fair to poor. Leakage is expected through both abutments and the foundation. Pervious material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

****

SITE CP-3256
(Turkey Hill Pond)

Location: On Turkey Hill Brook near Brooks Road in Paxton, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
1012	95	3	700	1.1

Potential for Expansion: Limited; the pond is located in a residential area. The relatively small drainage area also limits the expansion potential.

Remarks: The dam is a 10 foot long concrete structure. The concrete in the dam is spalling and the fill around the edges of the concrete has been washed away.

Ownership and Use: The site is owned by Linwood Erskine and is used primarily for recreation. This is an enlarged great pond open to public use.

****

SITE CP-3257 (Dean Pond)

Location: On Fivemile River near Spencer Road in Oakham, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
801	65	8	1600	2.5

Potential for Expansion: Limited; many houses line the shore.

Remarks: The dam is a 120 foot long earth-fill structure with a 10 foot top width. The principal spillway is a concrete weir, 7.5 feet wide and 2.5 feet deep.

Ownership and Use: The site is owned by Sylvester Dean and is used primarily for recreation.

SITE CP-3258 (Eames Pond)

Location: On Turkey Hill Brook near Mill Street in Paxton, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
100	55	12	1550	2.4

Potential for Expansion: The surface area could nearly be quadrupled; however, the larger surface area together with Turkey Hill Pond (Site CP-3256) in the same drainage area might result in excessive evaporation losses.

Remarks: The dam is a 210 foot long earth-fill and stone rubble structure with a 7 foot top width. The upstream slope is vegetated; the downstream slope is vertical and faced with stone. The spillway is a two-stage weir structure. The first stage has a box inlet with a 5 foot long weir and a 3 foot square fieldstone conduit. The second stage is a broad crested concrete weir, 18 feet wide and 25 feet long. The concrete in the right sidewall is spalling and several stones are missing from the outlet channel.

Ownership and Use: The Pond is owned by Paul Spaulding. The Massachusetts Department of Natural Resources owns land surrounding the Pond. The site is used primarily for recreation.

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SITE CP-3259 (Browning Pond)

Location: On Sevenmile River at Browning Pond Road in Spencer, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
748	100	6	2200	3.4

Potential for Expansion: Limited; houses line the shore. Steep topograpy limits any significant increase in surface area.

Remarks: The dam is a 140 foot long earth-fill structure with rubble retaining walls. The upstream slope, above the waterline, is vertical. The principal spillway is constructed of stone masonry. Both abutments have heavy brush and trees growing on them. Large sections of the stone masonry in the spillway have fallen into the outlet channel.

Ownership and Use: The site is owned by the Mann and Stevens Wool Co. and is used primarily for recreation.

****

SITE CP-3260 (Thompsons Pond)

Location: On Turkey Hill Brook near Camp Marshall Road in Spencer, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
863	115	21	7400	11.6

Potential for Expansion: Limited; houses and cottages line the shore.

Remarks: The dam is a 250 foot long earth-fill structure with a 12 foot top width. The upstream slope is riprapped, the downstream slope has vegetation. The principal spillway is a 40 foot wide concrete chute. Moderate brush is growing on the downstream slope; light brush is growing on the upstream slope.

Ownership and Use: The site is owned by the Massachusetts Department of Natural Resources and is leased by the 4-H Club. The site is used primarily for recreation.

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SITE CP-3261 (Cusky Pond)

Location: On an unnamed tributary of Sucker Brook near Barre Road in New Braintree, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
979	30	5	450	0.7

Potential for Expansion: The relatively small drainage area limits the expansion potential.

Remarks: The dam is a 260 foot long earth-fill structure with a 20 foot top width. The outlet, located on the left abutment, is a vegetated trapezoidal channel with a 4 foot bottom width. There is also a vegetated emergency spillway on the right abutment. There is a moderate amount of brush growing on the dam.

Ownership and Use: The site is owned by Lewis King and is a private fishing pool.

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SITE CP-3262
(Buck Hill Reservoir)

Location: On an unnamed brook near McCormack Road in Spencer, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
Approx. 840	10	14	60	0.1

Potential for Expansion: The very small drainage area limits expansion potential.

Remarks: The dam is a 400 foot long earth-fill structure. Both abutments are vegetated. The principal spillway is a 72 foot long, 18 inch diameter corrugated metal pipe. The pond drain is a 10 inch pipe.

Ownership and Use: The site is owned by the Massachusetts Department of Natural Resources and is leased by the 4-H Club. The primary use is wildlife protection.

SITE CP-3263 (Brooks Pond)

Location: On Fivemile River near Brooks Pond in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	(Sq. Mi.)
665	185	15	8300	13.0

Potential for Expansion: Limited; many houses and cottages line the shore. The steep topography limits any significant increase in surface area.

Remarks: The dam is a 250 foot long earth and rock-fill structure with a 30 foot top width. The principal spillway is a 35 foot long crescent-shaped concrete weir.

Ownership and Use: The site is owned by the Daniels Manufacturing Co. and is used primarily for recreation.

SITE CP-3264 (Sugden Reservoir)

Location: On an unnamed tributary of Turkey Hill Brook near Paxton Road in Spencer, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
839	90	30	3700	5.8

Potential for Expansion: Limited; many houses line the shore.

Remarks: The dam is a 325 foot long earth-fill structure with a 10 foot top width. The downstream slope is grassed; the upstream slope has rock riprap. The principal spillway is composed of two straight sections of ogee weir. A concrete lip at the end of the outlet channel acts as a stilling basin.

Ownership and Use: The site is owned by the Wickwire-Spencer Steel Corporation and is used primarily for recreation. Water rights are owned by the Town of Spencer.

SITE CP-3265 (Shaw Pond)

Location: On Shaw Brook near Bond Street in Leicester, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
993	70	4	300	0.5

Potential for Expansion: The relatively small drainage area limits the potential for expansion.

Remarks: The dam is a 550 foot long earth-fill structure with a 30 foot top width. The upstream slope has rock riprap; the downstream slope is covered with heavy brush growth. The principal spillway is an 8 foot long concrete weir with stop logs.

Ownership and Use: The site is owned by the Town of Leicester and is used for a water supply reservoir.

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SITE CP-3266 (Kittredge Dam)

Location: On an unnamed tributary of Fivemile River north of Kittredge Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
649.5	7	27	1100	1.7

Potential for Expansion: The existing pool does not maintain its maximum elevation during the summer months.

Remarks: The dam is a 1200 foot long earth-fill structure with a 12 foot top width. The principal spillway is a 30 inch diameter concrete conduit with a riser inlet structure. The riser is equipped with stop logs to control the water level. The vegetated emergency spillway is 225 feet wide. The site has capacity for 4 acre-feet of sediment storage, 19 acre-feet for fish and wildlife improvement, and 437 acre-feet for floodwater.

Ownership and Use: The site is owned by the Commonwealth of Massachusetts-Water Resources Commission and is used for fish and wildlife and flood protection. The dam was built as part of the Upper Quaboag River PL-566 Watershed Project.

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SITE CP-3267
(Horse Pond)

Location: On an unnamed brook at Pond Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
916	60	31	1050	1.6

Potential for Expansion: Steep topography limits any significant increase in surface area. It appears that storage volume can be increased by about 1000 acre-feet.

Remarks: The dam is a 415 foot long earth-fill and stone rubble structure with a 7 foot top width. The upstream slope is riprapped. The concrete spillway, located on the right abutment, has a weir length of 26 feet and a depth of 7 feet. There is a 48 inch gated outlet located near the left abutment. The concrete in the left wingwall of the spillway is cracked; and concrete is spalling in the outlet channel.

Onwership and Use: The site is owned by the Town of North Brookfield and is used as a water supply reservoir.

****

SITE CP-3268 (Horse Pond Dam)

Location: On the Fivemile River north of Kittredge Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
650	10	34	2600	4.1

Potential for Expansion: It appears that a larger permanent pool could be constructed at the site in conjunction with the flood protection feature.

Remarks: The dam is a 1000 foot long earth-fill structure with a 12 foot top width. The principal spillway is a 30 inch diameter concrete conduit with a riser inlet structure. The riser is equipped with stop logs to control the water level. The vegetated emergency spillway is 300 feet wide. The site has capacity for 13 acre-feet of sediment storage, 26 acre-feet for fish and wildlife improvement and 1370 acre-feet for floodwater.

Ownership and Use: The site is owned by the Commonwealth of Massachusetts-Water Resources Commission and is used for fish and wildlife and flood protection. The dam was built as part of the Upper Quaboag River PL-566 Watershed Project.

SITE CP-3269 (Doane Pond)

Location: On an unnamed brook near Oakham Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
896	30	10	1550	2.4

Potential for Expansion: Limited; steep topography limits any significant increase in surface area. Two roads and Horse Pond (Site CP-3267) would be affected.

Remarks: The dam is a 290 foot long earth-fill structure with a top width of 10 feet. The dam has a core of concrete and sheet piling. The spillway is a 45 foot wide grouted stone channel. Both of the slopes are free of brush and well groomed.

Ownership and Use: The site is owned by the Town of North Brookfield and is used as a water supply.

****

SITE CP-3270 (Lake Whittemore)

Location: On an unnamed brook near Hastings Road in Spencer, Mass.

Paxton, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
884	55	16	400	0.6

Potential for Expansion: Limited; many houses line the shore. The relatively small drainage area limits the potential for expansion. Steep topography limits any significant increase in surface area.

Remarks: The dam is a 340 foot long earth-fill structure with a 20 foot top width. The upstream slope is partially rip-rapped near the spillway. The principal spillway is a concrete ogee weir, 25 feet long and 5.5 feet deep. Heavy brush is growing on both the upstream and downstream slopes.

Ownership and Use: The site is owned by the Town of Spencer and is used for recreation.

****

SITE CP-3271 (Sucker Dam)

Location: On Sucker Brook near Shea Road in West Brookfield, Mass.

Ware, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
flood pool 646	flood pool 62	27	1050	1.6

Potential for Expansion: It appears that a permanent pool could be constructed at the site in conjunction with the flood protection feature.

Remarks: The dam is a 1100 foot long earth-fill structure with a 12 foot top width. The principal spillway is a 30 inch diameter concrete conduit with a riser inlet. The vegetated emergency spillway is 130 feet wide. The total floodwater storage in the site is 603 acre-feet.

Ownership and Use: The site is owned by the Commonwealth of Massachusetts-Water Resources Commission and is used for flood protection. The dam was built as part of the Upper Quaboag River PL-566 Watershed Project.

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SITE CP-3272 (Howe Pond)

Location: On the Cranberry River near Meadow Road in Spencer, Mass.

East Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
665	25	13	2400	3.8

Potential for Expansion: Limited; the area surrounding the pond is a well developed recreation area.

Remarks: The dam is a 200 foot long earth-fill structure with a 20 foot top width. The spillway is a 14.5 foot wide stone masonry weir with a stepped outlet channel. The dam is well maintained. There is another earth-fill dam upstream which maintains a 2 foot higher water level. The spillway is an ogee weir section with flashboards.

Ownership and Use: The site is owned by the Massachusetts Department of Natural Resources and is used primarily for recreation.

****

SITE CP-3273 (Lake Lashaway)

Location: On the East Brookfield River at Route 9 in East Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
614	285	15	16,050	25.1

Potential for Expansion: Limited; many houses line the shore.

Remarks: The dam is a 500 foot long earth-fill and stone rubble structure with a 30 foot top width. The concrete weir spillway is a 50 foot long crescent-shaped structure.

Ownership and Use: The site is owned by Daniels Manufacturing Company and is primarily used for recreation.

****

SITE CP-3274 (Brookhaven Lake)

Location: On an unnamed brook near Pierce Road in West Brookfield, Mass.

Ware, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
675	30	9	1950	3.1

Potential for Expansion: Limited; steep topography limits any significant increase in surface area. Route 9 and Pierce Road would be affected by an increase in pool size.

Remarks: The dam is a 100 foot long earth-fill structure with a 15 foot top width. The upstream slope is partially rip-rapped. The principal spillway is a 29 foot long concrete weir with flashboards.

Ownership and Use: The site is owned by the Brookhaven Association and is used primarily for recreation.

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SITE CP-3275 (Cranberry Meadow Pond)

Location: On an unnamed brook near Herbert Julicour Road in Spencer, Mass.

East Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
761	65	8.5	600	0.9

Potential for Expansion: Limited; many houses line the shore. The relatively small drainage area limits the potential for expansion.

Remarks: The dam is a 140 foot long earth-fill structure with a top width of 16 feet. The spillway is a concrete chute, 7.5 feet wide with a 2.5 foot deep weir. There are 15-inch diameter trees growing on the top of the dam. The support beneath the concrete chute has almost completely eroded.

Ownership and Use: The site is owned by John Burokas and is used primarily for recreation.

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SITE CP-3276 (Wickaboag Pond)

Location: On Mill Brook near the intersection of Routes 67 and 9 in West Brookfield, Mass.

Warren, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
599	320	10	11,450	17.9

Potential for Expansion: Limited; many houses line the shore.

Remarks: The dam is a 200 foot long earth-fill structure with a 12 foot top width. The spillway is a 30 foot long timber crib structure located on the left abutment. There is also a 4 foot gated corrugated metal pipe near the timber crib. Heavy brush and 6-inch trees are growing on the dam.

Ownership and Use: The site is owned by the Town of West Brookfield and is used primarily for recreation.

****

SITE CP-3277 (Lamberton Dam)

Location: On Lamberton Brook near Old Warren Road in West Brookfield, Mass.

Warren, Mass. USGS quadrangle

Surface Elevation flood pool	Surface Area (Acres) flood pool	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
623	87	26	2850	4.5

Potential for Expansion: Limited; addition of a permanent pool to this site would raise the flood pool above Route 9.

Remarks: The dam is a 600 foot long earth-fill structure with a 12 foot top width. The principal spillway is a 48-inch diameter concrete conduit with a riser inlet. The vegetated emergency spillway is 200 feet wide. The total floodwater storage in the site is 803 acre-feet.

Ownership and Use: The site is owned by the Commonwealth of Massachusetts-Water Resources Commission and is used for flood protection. The dam was built as part of the Upper Quaboag River PL-566 Watershed Project.

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SITE CP-3278 (Rice Pond)

Location: On Trout Brook near the intersection of Lake and Rice Corner Roads in Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
617	15	6	2050	3.2

Potential for Expansion: Expansion would interfere with the proposed Rice Site (CP-3281) being planned upstream as part of the Upper Quaboag River PL-566 Watershed Project.

Remarks: The dam is part of the Rice Corner Road highway embankment and is about 100 feet long. The upstream slope has a vertical stone masonry wall. The spillway is a 38.5 foot long semi-circular concrete weir. There is also a 30-inch gated drain.

Ownership and Use: The site is owned by the Town of Brookfield and is used primarily for recreation.

****

SITE CP-3279 (Comins Pond)

Location: On an unnamed tributary to the Quaboag River about 2400 feet upstream from Route 19 in Warren, Mass.

Warren, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
631	25	13	1250	2.0

Potential for Expansion: Steep topography limits any significant increase in surface area.

Remarks: The dam is a 380 foot long earth-fill structure with an 8 foot top width. The spillway is a 31 foot long ogee concrete weir.

Ownership and Use: The site is owned by Charles E. Rice and is used by the Town of Warren as a recreation area.

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SITE CP-3280 (Wright Mill Dam)

Location: On the Quaboag River about 700 feet upstream of the Warren-Brimfield Road bridge in Warren, Mass.

Warren, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		12	92,200	144.1

Potential for Expansion: Limited; the dam is located in an industrial area.

Remarks: The dam is a 100 foot long concrete weir structure. The left abutment is a factory building and the right abutment is the Penn-Central railroad bed.

Ownership and Use: The site is owned by the William E. Wright Company and is used for industrial purposes.

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The following sites are being planned as part of the Upper Quaboag River PL-566 Watershed Project. For details concerning this development, contact the U.S. Department of Agriculture, Soil Conservation Service, 29 Cottage Street, Amherst, Massachusetts 01002.

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SITE CP-3281

Location: On Trout Brook about 400 feet downstream from the old Rice Reservoir dam in Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°11'30" Longitude: 72°06'13"

Remarks: This is the Rice Site being planned as a floodwater retarding structure.

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SITE CP-3282

Location: On Turkey Hill Brook about 1750 feet upstream from Gold Nugget Road in Spencer, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°16'35" Longitude: 71°58'38"

Remarks: This is the Turkey Hill Site being planned as a multiple purpose low-flow augmentation and floodwater retarding structure.

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SITE CP-3283

Location: On Shaw Brook about 200 feet upstream from Donnelly Cross Road in Spencer, Mass.

Paxton, Mass. USGS quadrangle

Latitude: 42°16'18" Longitude: 71°57'37"

Remarks: This is the Shaw Site being planned as a multiple purpose municipal water supply, low-flow augmentation, and floodwater retarding structure. The water supply feature will be used by the Town of Leicester.

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SITE CP-3284

Location: On the Fivemile River about 1800 feet upstream from Shore Road in North Brookfield, Mass.

East Brookfield, Mass. USGS quadrangle

Latitude: 42°14'57" Longitude: 72°02'31"

Remarks: This is the Fivemile Site being planned as a floodwater retarding structure.

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SITE CP-3285

Location: On the Sevenmile River about 700 feet upstream from Cooney Road in Spencer, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°15'59" Longitude: 72°00'22"

Remarks: This is the Sevenmile Site which was investigated as a possible multiple purpose low-flow augmentation and floodwater retarding structure. The site was deleted from the plan because of a lack of flood prevention benefits and poor geological conditions.

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SITE CP-3286

Location: On Sucker Brook about 1250 feet downstream from Murphy Road in North Brookfield, Mass.

North Brookfield, Mass. USGS quadrangle

Latitude: 42°17'23" Longitude: 72°07'24"

Remarks: This is the Meadow Site which is being planned as a multi-purpose recreation and floodwater retarding structure.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3201 DA= 0.89 SQ MI = 570 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-20-11 LONGITUDE 72-03-08																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 228 CFS																	
902.5	0	0.0		5		2.5	915.6	E	197	4.1	700	918.0	22	920.0	20	14	*****
911.0	100	2.0	1470	18	8130	11.1	913.5	E	154	3.2	950	916.0	21	917.5	17	10	0.21
919.0	260	5.5	920	22	10640	19.0	921.5	E	326	6.8	730	923.9	25	925.4	25	26	0.39
931.1	581	12.2	770	30	14890	31.2	933.6	E	665	14.0	680	936.0	33	937.5	38	75	0.62
940.8	901	19.0	730	37	17990	40.8	943.3	E	1002	21.1	660	945.5	41	947.3	47	140	0.75
942.5	964	20.2	730	38	18400	42.5	945.0	E	1068	22.5	660	947.3	43	949.0	49	155	0.77
SITE-CP-3202 DA= 1.48 SQ MI = 947 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-19-42 LONGITUDE 72-02-57																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 269 CFS																	
802.7	0	0.0		2		7.6	831.5	E	328	4.1	1540	834.0	29	835.6	41	125	*****
819.6	100	1.2	3780	13	29930	24.7	822.1	E	150	1.9	2510	824.5	17	826.0	31	63	0.26
835.1	412	5.1	1810	31	23980	40.2	837.6	E	507	6.4	1470	840.0	40	841.5	47	183	0.64
850.5	1037	13.1	1180	47	26170	55.5	853.0	E	1179	14.8	1030	855.3	53	856.6	62	403	1.06
866.5	1973	25.0	880	71	24480	71.5	869.0	E	2160	27.4	800	871.4	79	873.3	78	773	1.35
SITE-CP-3203 DA= 4.26 SQ MI = 2726 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-19-07 LONGITUDE 72-02-27																	
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 1157 CFS																	
741.9	100	0.4	6180	16	39300	17.9	741.9	T	134	0.6	4610	754.9	29	758.7	35	69	0.34
749.5	248	1.1	3840	23	40810	25.5	749.5	T	282	1.2	3380	762.5	39	767.2	43	145	0.66
759.7	545	2.4	2120	35	33450	35.7	759.7	T	579	2.5	2000	768.7	50	771.7	48	210	1.14
767.0	841	3.6	1880	47	33570	43.0	767.0	T	876	3.9	1810	770.0	52	771.8	48	213	1.50

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-3204 DA= 2.80 SQ MI = 1792 AC USGS QUAD-PAXTON LATITUDE 42-19-29 LONGITUDE 71-59-54																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 835 CFS																	
767.4	0	0.0		5		9.3	796.8	E	873	5.8	740	799.3	82	802.5	45	187	*****
778.5	100	0.7	6500	13	4840C	20.5	778.5	T	122	0.8	5310	791.4	53	794.5	37	116	0.31
794.7	706	4.6	1230	65	1337C	36.7	803.2	E	1417	9.5	610	805.5	106	808.5	51	252	1.14
808.2	1917	12.8	630	116	1035C	50.2	812.7	E	2511	16.7	480	815.0	145	817.8	60	376	1.99
820.9	3733	25.0	400	169	873C	62.9	823.4	E	4188	28.0	350	825.8	189	828.3	70	555	2.56
SITE-CP-3205 DA= 1.43 SQ MI = 915 AC USGS QUAD-PAXTON LATITUDE 42-19-29 LONGITUDE 71-58-09																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 426 CFS																	
932.1	0	0.0		9		1.2	940.0	E	317	4.1	480	942.3	85	945.3	14	14	*****
936.1	100	1.2	1790	40	441C	5.1	938.6	E	238	3.0	750	941.0	77	943.1	12	10	0.25
938.4	206	2.7	1060	57	384C	7.3	940.9	E	385	5.0	570	943.3	91	945.9	15	15	0.41
940.0	313	4.1	780	70	347C	9.1	942.5	E	522	6.8	470	945.0	102	947.5	17	19	0.54
942.5	503	6.6	570	86	335C	11.5	945.0	E	749	9.8	380	947.3	116	949.9	19	26	0.71
SITE-CP-3206 DA= 2.16 SQ MI = 1382 AC USGS QUAD-PAXTON LATITUDE 42-19-14 LONGITUDE 71-58-15																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 644 CFS																	
906.4	0	0.0		5		6.4	933.9	E	583	5.1	1200	936.3	87	939.8	40	212	*****
916.9	100	0.8	8120	13	6084C	16.9	916.9	T	117	1.0	6930	931.9	47	936.8	37	178	0.29
933.8	563	4.9	1600	65	1391C	33.8	938.3	E	969	8.3	930	940.6	126	943.5	44	260	0.88
942.5	1490	12.8	790	141	836C	42.5	945.0	E	1865	16.2	630	947.4	180	950.1	50	360	1.54
950.6	2880	25.0	510	207	713C	50.7	953.1	E	3457	30.0	430	955.0	248	958.3	58	507	1.97

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(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-3207 DA= 4.33 SQ MI = 2771 AC — USGS QUAD-PAXTON — LATITUDE 42-18-16 LONGITUDE 71-57-54																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.80 IN, PEAK FLOW = 990 CFS																
874.3	0	0.0		15		3.3	903.3 E	1504	6.5	440	905.6	79	909.1	38	147	*****
878.4	100	0.4	5360	33	1617C	7.3	878.4 T	135	0.6	3980	893.4	58	897.4	26	56	0.34
890.8	662	2.9	1190	54	1460C	19.7	890.8 T	697	3.0	1130	903.8	76	907.0	36	127	1.29
907.4	1787	7.6	910	81	1991C	36.4	907.4 T	1821	7.8	890	920.3	102	925.0	54	393	2.38
919.8	2911	12.6	630	102	1793C	48.8	919.8 T	2946	12.8	620	926.6	112	929.5	59	493	3.03
922.5	3205	13.8	580	106	1760C	51.5	922.5 T	3240	14.0	580	927.5	114	929.6	59	496	3.20
SITE-CP-3208 DA= 0.74 SQ MI = 474 AC — USGS QUAD-PAXTON — LATITUDE 42-17-40 LONGITUDE 71-56-08																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.80 IN, PEAK FLOW = 215 CFS																
1021.0	0	0.0		4		5.1	1030.6 E	164	4.1	910	1033.0	45	1035.8	20	18	*****
1028.5	100	2.5	1750	23	748C	12.5	1031.0 E	176	4.5	1000	1033.4	47	1035.5	20	17	0.20
1030.1	142	3.5	1430	28	718C	14.1	1032.6 E	239	6.1	850	1035.0	57	1037.4	21	22	0.26
1031.4	184	4.6	1230	36	636C	15.3	1033.9 E	297	7.5	760	1036.1	64	1038.6	23	26	0.30
1032.4	226	5.6	1100	42	596C	16.4	1034.9 E	355	9.0	700	1037.3	71	1039.9	24	30	0.34
1032.5	228	5.8	1100	42	594C	16.5	1035.0 E	358	9.1	700	1037.4	71	1039.9	24	30	0.34
SITE-CP-3209 DA= 1.88 SQ MI = 1203 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-18-57 LONGITUDE 72-06-32																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 8.00 IN, PEAK FLOW = 561 CFS																
890.0	0	0.0		5		6.1	903.0 E	416	4.1	380	905.4	68	907.9	24	17	*****
895.9	100	1.0	1630	29	571C	11.8	902.4 E	388	3.9	420	904.9	66	906.9	23	15	0.27
903.1	417	4.1	550	59	387C	19.2	907.6 E	740	7.3	310	910.0	89	912.4	28	26	0.71
911.5	1050	10.5	310	94	351C	27.5	914.0 E	1313	13.1	250	916.5	115	918.8	35	46	1.21
917.4	1684	16.7	360	119	514C	33.4	917.4 T	1699	16.9	360	920.0	129	921.9	38	59	1.50
917.5	1693	16.9	370	119	523C	33.5	917.5 T	1708	17.0	370	920.0	129	922.0	38	60	1.50

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICCPEE RIVER — SUBWATERSHED UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3210 DA= 6.16 SQ MI = 3942 AC USGS QUAD-NORTH BROOKFIELD LATITUDE 42-17-44 LONGITUDE 72-00-14																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 1695 CFS																	
737.0	0	0.0		11		10.1	754.5	E	2327	7.1	280	756.7	281	764.0	37	109	*****
741.8	100	0.3	6630	51	1289C	14.7	754.3	E	2273	6.8	290	756.8	282	762.5	36	99	0.37
749.0	1002	3.0	840	196	428C	22.0	757.5	E	3149	9.6	270	760.0	314	766.3	39	125	1.90
756.5	2806	8.5	350	280	350C	29.5	763.0	E	4868	14.7	200	765.0	354	769.9	43	153	3.57
762.4	4609	14.0	270	333	373C	35.4	762.4	T	4658	14.2	270	767.3	371	769.9	43	154	4.57
762.5	4651	14.2	270	334	372C	35.5	762.5	T	4700	14.2	260	767.4	372	770.0	43	154	4.60
SITE-CP-3211 DA= 2.40 SQ MI = 1536 AC USGS QUAD-PAXTON LATITUDE 42-16-50 LONGITUDE 71-56-53																	
SITE RATING (1) STREAM WATER QUALITY (A) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 689 CFS																	
978.8	0	0.0		5		6.8	996.0	E	662	5.1	480	998.4	77	1001.5	29	39	*****
985.0	100	0.8	3360	29	1177C	13.1	995.5	E	639	5.0	530	998.0	76	1000.6	29	37	0.30
994.4	541	4.1	880	64	744C	22.4	1000.9	E	1044	8.2	450	1003.4	94	1005.9	34	57	0.92
1005.1	1422	11.1	490	100	699C	33.2	1009.6	E	1928	15.1	360	1012.1	154	1014.9	43	104	1.58
1012.4	2304	18.0	370	158	541C	40.4	1014.9	E	2751	21.5	310	1017.3	238	1020.0	48	140	1.98
1012.5	2313	18.1	370	159	539C	40.5	1015.0	E	2763	21.6	310	1017.4	238	1020.0	48	140	1.98
SITE-CP-3215 DA= 8.58 SQ MI = 5491 AC USGS QUAD-NORTH BROOKFIELD LATITUDE 42-16-30 LONGITUDE 72-00-16																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 1748 CFS																	
680.0	0	0.0		19		7.0	700.9	T	1899	4.1	320	705.0	188	707.9	35	27	*****
683.2	100	0.2	5690	40	1437C	10.2	683.2	T	169	0.4	3370	698.2	140	703.0	30	15	0.40
690.0	506	1.1	1100	82	681C	17.0	690.0	T	575	1.2	970	703.0	174	706.9	34	24	1.34
697.5	1319	2.9	450	135	440C	24.5	697.5	T	1387	3.0	430	704.4	184	707.3	34	25	2.56
700.3	1725	3.8	410	155	451C	27.2	700.3	T	1794	3.9	390	705.0	188	707.3	34	25	3.05

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3217	DA= 2.08 SQ MI = 1331 AC		USGS QUAD-NORTH BROOKFIELD				LATITUDE 42-16-59 LONGITUDE 72-03-53										
SITE RATING (1)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM				RUNOFF = 8.00 IN, PEAK FLOW = 576 CFS										
810.4	0	0.0		4		8.3	847.0	E	513	4.6	960	849.5	30	851.8	50	115	*****
824.5	100	0.8	3350	10	32410	22.5	824.5	T	117	1.1	2870	831.4	14	833.3	31	40	0.28
833.0	209	1.9	2150	15	29730	31.0	833.0	T	225	2.0	2000	840.0	20	841.9	40	69	0.48
844.3	427	3.8	1300	25	22530	42.3	846.8	E	507	4.6	1090	849.3	30	850.9	49	110	0.75
851.8	644	5.8	1030	33	19960	49.8	854.3	E	747	6.6	890	856.8	41	858.5	56	154	0.95
852.5	667	6.0	1010	34	19660	50.5	855.0	E	770	6.8	870	857.5	42	859.0	57	158	0.97
SITE-CP-3218	DA= 10.02 SQ MI = 6413 AC		USGS QUAD-WARE				LATITUDE 42-17-23 LONGITUDE 72-09-36										
SITE RATING (3)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM				RUNOFF = 8.00 IN, PEAK FLOW = 1805 CFS										
645.0	0	0.0		25		10.1	683.0	E	3722	7.0	210	685.3	223	689.9	55	168	*****
648.2	100	0.2	5350	38	14020	13.2	648.2	T	180	0.3	2970	663.2	91	667.0	32	40	0.41
659.4	759	1.4	1320	79	12610	24.4	659.4	T	839	1.6	1190	674.3	130	680.5	46	102	1.90
672.5	2076	3.9	530	123	9030	37.5	672.5	T	2156	4.0	510	685.3	224	689.8	55	167	3.65
681.5	3394	6.4	340	176	6650	46.5	681.5	T	3474	6.5	340	687.5	251	689.9	55	168	4.84
682.5	3546	6.6	320	187	6160	47.5	682.5	T	3626	6.8	320	687.5	252	689.7	55	166	4.98
SITE-CP-3219	DA= 8.80 SQ MI = 5632 AC		USGS QUAD-WARE				LATITUDE 42-17-44 LONGITUDE 72-09-17										
SITE RATING (3)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM				RUNOFF = 8.00 IN, PEAK FLOW = 1634 CFS										
657.8	100	0.2	6120	24	25540	13.7	657.8	T	170	0.4	3590	672.7	46	676.9	33	61	0.40
667.7	404	0.8	1810	37	19900	23.7	667.7	T	474	1.0	1540	680.7	66	683.5	40	100	1.16
674.8	708	1.5	1400	51	19570	30.7	674.8	T	778	1.7	1270	687.8	109	691.0	47	168	1.74
684.2	1315	2.8	810	87	12150	40.2	684.2	T	1386	3.0	770	689.2	117	691.4	47	172	2.58

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV +TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3220 DA= 8.05 SQ MI = 5152 AC USGS QUAD-WARE LATITUDE 42-17-51 LONGITUDE 72-08-33																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 1660 CFS																
683.4	0	0.0		19		9.3	702.2 T	1782	4.1	540	706.7	213	709.7	36	146	*****
687.0	100	0.2	6860	34	2028C	13.1	687.0 T	164	0.4	4170	700.0	175	703.3	29	74	0.39
693.5	460	1.1	1850	91	937C	19.5	693.5 T	524	1.2	1620	704.5	200	707.5	34	118	1.23
699.2	1179	2.7	840	164	605C	25.2	699.2 T	1243	2.9	800	706.2	210	709.2	35	139	2.33
702.5	1766	4.1	630	189	593C	28.5	702.5 T	1830	4.3	610	707.5	218	709.9	36	149	3.03
SITE-CP-3222 DA= 0.70 SQ MI = 448 AC USGS QUAD-NORTH BROOKFIELD LATITUDE 42-16-44 LONGITUDE 72-06-00																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 8.00 IN, PEAK FLOW = 209 CFS																
795.0	0	0.0		4		2.0	807.5 E	155	4.1	810	809.8	17	812.7	20	16	*****
804.3	100	2.7	1350	15	908C	11.3	806.8 E	144	3.9	930	809.2	17	810.7	18	14	0.20
811.9	226	6.1	890	18	1091C	18.9	814.4 E	279	7.5	720	816.8	21	818.4	25	26	0.33
823.4	478	12.8	710	27	1272C	30.4	825.9 E	554	14.7	610	828.3	32	830.4	37	61	0.50
831.5	731	19.6	630	35	1320C	38.5	834.0 E	825	22.1	560	836.3	38	838.9	46	96	0.60
832.5	767	20.5	620	36	1336C	39.5	835.0 E	862	23.1	550	837.3	39	839.9	47	101	0.61
SITE-CP-3223 DA= 2.41 SQ MI = 1542 AC USGS QUAD-NORTH BROOKFIELD LATITUDE 42-15-49 LONGITUDE 72-06-26																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 710 CFS																
669.5	0	0.0		4		10.6	710.5 E	724	5.6	930	712.9	37	716.5	58	199	*****
683.5	110	0.8	5640	12	5387C	24.6	683.5 T	129	1.0	4800	698.5	23	702.0	43	99	0.32
701.7	438	3.4	2200	26	3743C	42.7	701.7 T	457	3.5	2110	714.7	39	717.8	59	210	0.80
720.3	1094	8.5	1060	44	2629C	61.3	730.8 E	1757	13.7	660	733.3	82	736.9	78	423	1.40
732.5	1873	14.6	790	80	1836C	73.5	732.5 T	1893	14.7	780	737.4	90	739.8	81	462	1.83

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV + TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-3224 DA= 0.68 SQ MI = 435 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-15-43 LONGITUDE 72-04-42																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.90 IN, PEAK FLOW = 200 CFS																
793.5	0	0.0		2		5.5	819.8 E	151	4.1	2200	822.3	13	824.5	36	68	*****
818.5	131	3.5	2840	10	3603C	30.5	821.0 E	165	4.5	2260	823.4	14	824.9	37	71	0.24
825.6	226	6.1	2170	17	2933C	37.7	828.1 E	277	7.6	1770	830.5	22	832.0	44	112	0.32
834.6	416	11.5	1700	25	2886C	46.7	837.1 E	486	13.3	1460	839.6	28	841.5	54	193	0.46
841.6	607	16.7	1470	29	3086C	53.6	844.1 E	685	18.9	1300	846.5	30	848.5	61	273	0.55
842.5	628	17.2	1450	29	3135C	54.5	845.0 E	707	19.5	1290	847.3	30	849.3	61	283	0.55
SITE-CP-3228 DA= 0.67 SQ MI = 429 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-15-24 LONGITUDE 72-07-17																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.90 IN, PEAK FLOW = 197 CFS																
723.8	0	0.0		3		3.8	736.9 E	148	4.1	1510	739.4	31	742.5	22	27	*****
735.0	100	2.8	2540	20	1289C	15.0	737.5 E	163	4.6	1560	739.9	32	741.9	22	25	0.20
737.5	159	4.4	1970	26	1201C	17.5	740.0 E	236	6.6	1330	742.4	44	744.5	25	34	0.26
739.5	218	6.1	1690	31	1182C	19.6	742.0 E	314	8.8	1170	744.5	54	746.9	27	45	0.32
742.5	326	9.1	1410	44	1037C	22.5	745.0 E	458	12.8	1000	747.0	67	749.5	30	62	0.40
SITE-CP-3229 DA= 11.54 SQ MI = 7386 AC — USGS QUAD-WARE — LATITUDE 42-16-06 LONGITUDE 72-09-34																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.90 IN, PEAK FLOW = 1945 CFS																
610.8	0	0.0		25		6.8	646.8 E	4016	6.5	350	649.3	233	654.0	50	265	*****
613.7	100	0.2	3500	40	868C	9.7	616.2 E	302	0.5	1160	618.5	66	621.7	18	25	0.42
640.0	2648	4.3	690	158	1146C	36.0	640.0 T	2740	4.5	660	653.0	263	657.0	53	305	4.45
661.0	7743	12.6	300	325	718C	57.0	671.5 E	11653	18.9	200	673.9	422	679.4	75	709	8.10
680.3	15387	25.0	210	478	660C	76.3	680.3 T	15479	25.2	200	685.2	543	688.4	84	947	10.54

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3230 DA= 0.66 SQ MI = 422 AC USGS QUAD-EAST BROOKFIELD LATITUDE 42-14-32 LONGITUDE 72-03-23																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 192 CFS																	
640.4	0	0.0		4		2.4	650.0	E	146	4.1	1620	652.4	32	655.5	17	39	*****
648.2	100	2.8	2690	22	1244C	10.2	650.7	E	168	4.8	1600	653.0	34	655.3	17	39	0.20
652.9	230	6.5	1560	33	1075C	14.8	655.4	E	325	9.2	1100	657.8	47	660.5	22	57	0.32
659.2	490	13.8	1050	50	10260	21.2	661.7	E	630	17.9	820	663.8	59	666.5	28	94	0.49
663.9	750	21.2	850	59	1079C	25.9	666.4	E	905	25.7	700	668.3	66	670.8	33	132	0.58
666.0	880	25.0	790	62	1112C	28.0	668.5	E	1046	29.7	660	670.3	69	672.8	35	151	0.60
SITE-CP-3231 DA= 2.20 SQ MI = 1408 AC USGS QUAD-WARE LATITUDE 42-15-30 LONGITUDE 72-09-12																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 648 CFS																	
610.3	0	0.0		3		5.3	624.4	E	487	4.1	320	626.9	70	630.0	25	13	*****
616.4	100	0.8	1860	29	631C	11.3	626.9	E	648	5.5	290	629.3	79	632.8	28	17	0.29
621.5	310	2.5	710	51	435C	16.6	630.0	E	893	7.6	250	632.5	99	636.0	31	22	0.62
628.3	731	6.1	350	75	343C	23.2	632.8	E	1137	9.7	230	635.2	117	638.0	33	26	1.05
632.5	1093	9.3	370	98	408C	27.5	632.5	T	1110	9.5	360	637.5	132	640.0	35	30	1.33
SITE-CP-3232 DA= 2.20 SQ MI = 1408 AC USGS QUAD-EAST BROOKFIELD LATITUDE 42-14-01 LONGITUDE 72-04-24																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 583 CFS																	
628.0	0	0.0		4		9.1	647.7	E	487	4.1	560	650.2	63	652.2	33	34	*****
637.3	100	0.8	3460	20	1725C	18.2	649.8	E	608	5.1	570	652.3	71	654.5	36	41	0.29
642.7	244	2.0	1610	36	1100C	23.7	651.2	E	701	6.0	560	653.7	77	655.8	37	45	0.54
648.8	532	4.5	900	58	827C	29.7	653.3	E	850	7.1	570	655.8	85	657.7	39	54	0.87
652.5	772	6.6	790	72	844C	33.5	652.5	T	790	6.6	770	657.4	92	659.2	40	63	1.09

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV + TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3233 DA= 1.65 SQ MI = 1056 AC — USGS QUAD-EAST BROOKFIELD — LATITUDE 42-13-26 LONGITUDE 72-02-05																
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.70 IN, PEAK FLOW = 474 CFS																
618.5	0	0.0		9		2.5	633.3 E	365	4.1	590	635.8	40	638.9	23	29	*****
624.5	100	1.1	2940	22	13470	8.6	624.5 T	113	1.2	2600	633.5	36	636.5	21	23	0.26
626.8	153	1.7	2130	25	12840	10.8	626.8 T	166	1.9	1960	635.7	40	638.9	23	29	0.36
630.5	258	2.9	1400	31	11550	14.5	630.5 T	271	3.0	1330	637.0	42	639.9	24	32	0.50
632.5	323	3.6	1190	35	11090	16.5	632.5 T	336	3.8	1140	637.4	43	639.9	24	32	0.58
SITE-CP-3234 DA= 4.15 SQ MI = 2656 AC — USGS QUAD-EAST BROOKFIELD — LATITUDE 42-13-23 LONGITUDE 72-00-19																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.70 IN, PEAK FLOW = 1043 CFS																
636.2	0	0.0		7		7.1	670.7 E	1428	6.5	510	673.2	111	677.2	48	200	*****
645.3	100	0.5	5930	17	35020	16.2	645.3 T	133	0.6	4450	660.2	53	664.3	35	90	0.34
665.2	919	4.1	1120	75	13780	36.2	677.7 E	2245	10.1	460	680.2	146	684.0	55	285	1.57
680.2	2557	11.6	580	147	10070	51.2	688.7 E	3923	17.7	380	691.0	175	695.5	67	493	2.78
692.5	4548	20.6	380	181	9570	63.5	692.5 T	4582	20.7	380	697.4	203	699.9	71	588	3.60
SITE-CP-3235 DA= 7.71 SQ MI = 4934 AC — USGS QUAD-WARREN — LATITUDE 42-13-58 LONGITUDE 72-08-10																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.90 IN, PEAK FLOW = 2149 CFS																
609.5	100	0.2	5380	48	11270	6.5	609.5 T	162	0.4	3330	616.5	141	619.5	17	19	0.39
610.8	177	0.4	3320	63	9310	7.8	610.8 T	238	0.6	2460	617.0	148	620.0	17	20	0.61
612.0	253	0.6	2450	79	7860	9.0	612.0 T	315	0.8	1970	617.3	153	620.0	17	21	0.79
612.5	300	0.7	2050	86	7150	9.5	612.5 T	361	0.8	1700	617.5	155	620.0	17	21	0.90

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3236 DA= 0.85 SQ MI = 544 AC USGS QUAD-LEICESTER LATITUDE 42-12-33 LONGITUDE 71-59-42																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 244 CFS																
749.0	0	0.0		1		9.0	783.0 E	188	4.1	1890	785.3	11	787.5	48	77	*****
784.8	200	4.4	2490	11	4742C	44.8	787.3 E	234	5.1	2130	789.8	12	792.0	52	104	0.33
786.8	221	4.9	2410	11	4823C	46.8	789.3 E	256	5.6	2080	791.7	13	793.9	54	116	0.35
790.4	263	5.8	2270	12	4907C	50.4	792.9 E	304	6.6	1970	795.3	15	797.5	57	144	0.39
792.5	292	6.4	2200	14	4746C	52.5	795.0 E	333	7.3	1930	797.4	17	799.5	60	162	0.41
SITE-CP-3237 DA= 1.57 SQ MI = 1005 AC USGS QUAD-EAST BROOKFIELD LATITUDE 42-12-16 LONGITUDE 72-00-04																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 692 CFS																
731.3	0	0.0		3		11.3	748.7 E	347	4.1	770	751.0	68	753.8	34	46	*****
743.0	100	1.2	2940	25	1180C	23.0	747.5 E	280	3.3	1050	749.9	64	751.8	32	39	0.26
746.3	211	2.5	1580	44	767C	26.2	748.8 E	352	4.1	950	751.3	68	753.0	33	43	0.43
750.4	434	5.1	920	65	614C	30.4	752.9 E	620	7.3	650	755.3	79	757.3	37	59	0.67
752.5	583	7.0	760	71	622C	32.5	755.0 E	781	9.3	570	757.5	86	759.8	40	69	0.80
SITE-CP-3238 DA= 1.42 SQ MI = 909 AC USGS QUAD-WARREN LATITUDE 42-13-36 LONGITUDE 72-10-52																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 413 CFS																
619.3	0	0.0		5		4.3	629.9 E	314	4.1	640	632.4	59	635.0	20	17	*****
625.2	100	1.2	2100	31	6750	10.2	627.7 E	206	2.7	1020	630.0	55	631.7	17	11	0.25
630.0	306	4.0	920	55	5110	15.0	632.5 E	463	6.1	610	635.0	64	636.9	22	21	0.53
636.7	719	9.5	550	67	588C	21.7	639.2 E	905	12.0	440	641.7	76	643.9	29	41	0.87
642.4	1132	15.0	460	78	6640	27.4	644.9 E	1344	17.7	380	647.3	86	649.5	35	67	1.09
642.5	1139	15.0	450	78	665C	27.5	645.0 E	1350	17.7	380	647.4	86	649.7	35	67	1.10

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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV	STORAGE		COST PER AC FT	AREA	COST/ SURF AC	DEPTH AT DAM	CREST ELEV	STORAGE AT CREST		COST PER AC FT	ELEV	AREA	TOP ELEV	HGT	FILL VOL (1000	
(MSL)	AC FT	IN	($)	(AC)	($)	(FT)	(MSL)	AC FT	IN	($)	(MSL)	(AC)	(MSL)	FT	CY)	(MGD)
SITE-CP-3239			DA= 2.14 SQ MI = 1370 AC				USGS QUAD-EAST BROOKFIELD				LATITUDE 42-13-10 LONGITUDE 72-06-52					
SITE RATING (2)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM				RUNOFF = 7.70 IN, PEAK FLOW = 614 CFS					
603.0	0	0.0		17		1.0	609.5 E	474	4.1	460	612.0	155	614.8	13	10	*****
605.7	100	0.8	2510	61	412C	3.6	610.2 E	556	4.9	450	612.5	163	615.4	13	11	0.29
608.2	304	2.7	980	102	292C	6.1	610.7 E	627	5.5	470	613.2	170	615.7	14	12	0.61
610.0	507	4.4	720	131	278C	8.0	612.5 E	895	7.8	410	615.0	192	617.7	16	16	0.84
612.5	879	7.6	520	162	283C	10.5	615.0 E	1339	11.7	340	617.2	218	620.0	18	22	1.17
SITE-CP-3240			DA= 4.26 SQ MI = 2726 AC				USGS QUAD-EAST BROOKFIELD				LATITUDE 42-12-09 LONGITUDE 72-02-54					
SITE RATING (3)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM				RUNOFF = 7.70 IN, PEAK FLOW = 1157 CFS					
611.9	0	0.0		22		5.9	623.0 T	943	4.1	630	627.2	225	629.9	24	38	*****
614.7	100	0.4	5330	51	1053C	8.7	614.7 T	134	0.6	3970	623.5	165	626.3	20	27	0.34
617.5	293	1.2	2260	81	819C	11.6	617.5 T	327	1.4	2020	626.3	210	629.9	24	38	0.75
619.7	485	2.0	1420	103	673C	13.7	619.7 T	519	2.3	1330	626.7	216	629.9	24	38	1.06
622.5	837	3.6	860	147	489C	16.5	622.5 T	871	3.8	820	627.5	229	629.5	24	37	1.49
SITE-CP-3241			DA= 1.90 SQ MI = 1216 AC				USGS QUAD-EAST BROOKFIELD				LATITUDE 42-11-31 LONGITUDE 72-02-26					
SITE RATING (2)			STREAM WATER QUALITY (B)				100-YR PRIN SPWY DESIGN STORM				RUNOFF = 7.70 IN, PEAK FLOW = 545 CFS					
618.8	0	0.0		15		0.8	625.8 E	421	4.1	550	628.2	120	631.3	13	19	*****
621.7	100	1.0	2680	54	499C	3.6	626.2 E	461	4.5	580	628.5	123	631.4	13	19	0.27
625.2	352	3.5	960	89	381C	7.1	627.7 E	620	6.1	550	630.0	138	632.8	15	23	0.64
629.7	856	8.3	510	135	326C	11.7	632.2 E	1218	12.0	360	634.5	148	637.5	20	41	1.10
632.5	1246	12.3	390	143	340C	14.5	635.0 E	1626	16.1	300	637.2	154	639.9	22	51	1.32

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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3242 DA= 3.00 SQ MI = 1920 AC USGS QUAD-WARREN LATITUDE 42-13-03 LONGITUDE 72-09-36																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 883 CFS																	
675.4	0	0.0		6		6.4	703.4	E	933	5.8	650	705.9	88	709.2	40	143	*****
684.3	100	0.6	6250	18	34610	15.2	684.3	T	124	0.8	5040	699.2	57	704.0	35	95	0.31
690.8	255	1.6	2910	31	24040	21.7	690.8	T	279	1.7	2660	703.7	77	708.0	39	130	0.62
698.0	566	3.5	1530	54	16050	29.0	698.0	T	590	3.6	1460	706.7	92	710.0	41	151	1.01
702.5	840	5.1	1070	72	12530	33.5	702.5	T	864	5.4	1040	707.8	97	710.0	41	150	1.29
SITE-CP-3243 DA= 2.55 SQ MI = 1632 AC USGS QUAD-WARREN LATITUDE 42-12-45 LONGITUDE 72-09-34																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 741 CFS																	
686.4	0	0.0		6		6.4	714.5	E	746	5.5	720	717.0	52	720.2	40	120	*****
695.5	100	0.7	5220	17	30090	15.6	695.5	T	120	0.8	4330	708.5	39	711.9	32	65	0.30
712.9	650	4.8	1340	46	19050	32.9	725.4	E	1361	10.0	640	727.9	69	730.9	51	230	1.04
731.3	1750	12.8	800	75	18670	51.3	739.8	E	2470	18.2	570	742.3	95	745.5	65	471	1.81
749.4	3400	25.0	570	109	17840	69.4	753.9	E	3931	28.9	490	756.3	123	758.9	79	803	2.33
SITE-CP-3244 DA= 1.53 SQ MI = 979 AC USGS QUAD-EAST BROOKFIELD LATITUDE 42-12-10 LONGITUDE 72-07-29																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 439 CFS																	
604.5	0	0.0		5		4.6	628.5	E	386	4.6	1340	631.0	28	634.0	34	135	*****
614.5	100	1.2	4790	14	33540	14.5	614.5	T	112	1.4	4270	623.4	21	625.7	26	75	0.26
623.5	259	3.2	2540	21	31400	23.5	634.0	E	546	6.6	1200	636.5	41	638.8	39	179	0.49
635.2	577	7.1	1480	38	22750	35.2	641.7	E	885	10.8	970	644.0	58	646.8	47	267	0.79
642.5	914	11.2	1060	54	17930	42.5	645.5	E	1096	13.3	890	647.9	66	649.9	50	308	1.00

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3245 DA= 1.04 SQ MI = 666 AC USGS QUAD-WARREN LATITUDE 42-11-51 LONGITUDE 72-07-40																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 298 CFS																	
635.0	0	0.0		0		0.0	652.3	E	232	4.1	1170	654.7	25	657.9	23	51	*****
645.9	100	1.7	2920	16	1859C	10.8	652.4	E	233	4.1	1250	654.9	26	656.9	22	46	0.23
654.3	269	4.9	1620	25	1751C	19.2	658.8	E	401	7.1	1090	661.2	34	663.4	28	83	0.43
664.9	608	11.0	1040	41	1539C	29.9	667.4	E	726	13.1	870	669.9	51	672.2	37	153	0.68
672.0	947	17.1	860	54	1511C	37.0	674.5	E	1095	19.7	740	676.9	60	679.5	45	233	0.84
672.5	976	17.6	840	55	1507C	37.5	675.0	E	1125	20.2	730	677.3	61	679.9	45	236	0.85
SITE-CP-3246 DA= 1.12 SQ MI = 717 AC USGS QUAD-WARREN LATITUDE 42-13-47 LONGITUDE 72-13-21																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 330 CFS																	
822.6	0	0.0		6		1.7	832.4	E	248	4.1	1130	834.8	50	837.6	17	9	*****
828.5	100	1.7	2720	28	9660	7.5	831.0	E	192	3.2	1420	833.4	45	835.1	14	5	0.24
832.6	253	4.1	1460	43	8590	11.7	835.1	E	380	6.4	970	837.6	59	839.8	19	16	0.43
838.5	558	9.3	960	62	8580	17.5	841.0	E	733	12.3	730	843.5	75	846.1	25	42	0.68
842.5	826	13.7	800	73	9090	21.5	845.0	E	1025	17.2	650	847.3	84	849.8	29	68	0.83
SITE-CP-3247 DA= 0.44 SQ MI = 282 AC USGS QUAD-EAST BROOKFIELD LATITUDE 42-10-33 LONGITUDE 72-05-07																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 130 CFS																	
695.8	0	0.0		2		2.8	711.2	E	97	4.1	1750	713.5	11	716.5	23	22	*****
711.8	100	4.3	2190	10	2128C	18.7	714.3	E	131	5.6	1680	716.7	13	718.3	25	27	0.17
717.8	173	7.3	1750	14	2139C	24.7	720.3	E	214	9.1	1420	722.5	18	724.5	31	46	0.23
726.2	320	13.6	1420	21	2189C	33.2	728.7	E	378	16.1	1200	731.0	25	733.7	41	88	0.32
732.4	466	19.9	1210	27	2085C	39.4	734.9	E	539	23.0	1040	737.0	33	739.7	47	124	0.37
732.5	469	20.0	1200	27	2081C	39.5	735.0	E	543	23.1	1040	737.2	33	739.8	47	125	0.37

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICCPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER	DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3248 DA= 0.96 SQ MI = 614 AC USGS QUAD-WARREN LATITUDE 42-13-07 LONGITUDE 72-14-30																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 283 CFS																
541.7	0	0.0		3		4.6	559.9 E	212	4.1	950	562.3	31	565.5	29	28	*****
555.2	100	2.0	2180	17	1253C	18.2	559.7 E	207	4.0	1050	562.2	31	564.0	27	26	0.23
563.0	297	5.8	980	32	921C	26.0	565.5 E	388	7.6	750	568.0	39	570.0	33	39	0.43
573.0	690	13.5	630	46	943C	36.0	575.5 E	816	15.8	530	578.0	53	580.7	44	75	0.70
580.8	1083	21.2	530	57	999C	43.8	583.3 E	1238	24.2	460	585.5	64	588.4	51	113	0.84
582.5	1184	23.1	510	60	1011C	45.5	585.0 E	1345	26.2	450	587.3	67	590.0	53	123	0.86
SITE-CP-3249 DA= 1.94 SQ MI = 1242 AC USGS QUAD-WARREN LATITUDE 42-13-10 LONGITUDE 72-13-23																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 561 CFS																
629.9	0	0.0		2		13.8	673.0 E	475	4.6	2100	675.5	24	677.4	61	282	*****
653.0	136	1.2	4750	11	5916C	37.0	655.5 E	179	1.7	3600	658.0	14	659.8	44	118	0.35
672.0	438	4.1	2560	21	5285C	56.0	674.5 E	510	4.9	2200	677.0	26	678.7	63	297	0.74
692.0	1041	10.1	1510	39	3984C	76.1	694.5 E	1161	11.2	1350	697.0	46	698.5	83	600	1.22
707.5	1797	17.4	1400	59	4259C	91.5	707.5 T	1813	17.5	1390	710.0	62	712.0	96	879	1.58
SITE-CP-3250 DA= 1.30 SQ MI = 832 AC USGS QUAD-WARREN LATITUDE 42-13-02 LONGITUDE 72-12-21																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 383 CFS																
595.3	0	0.0		4		4.3	612.5 E	288	4.1	870	615.0	33	617.9	27	38	*****
605.0	100	1.4	2750	18	1571C	14.1	613.5 E	318	4.6	870	616.0	35	618.5	28	40	0.25
613.7	313	4.5	1160	31	1163C	22.7	618.2 E	478	6.8	760	620.5	42	623.0	32	59	0.50
624.4	738	10.7	750	50	1114C	33.4	626.9 E	879	12.7	630	629.4	60	631.7	41	113	0.84
631.8	1164	16.7	680	65	1223C	40.8	634.3 E	1340	19.2	590	636.8	73	639.5	48	192	1.04
632.5	1208	17.4	670	66	1225C	41.5	635.0 E	1387	20.0	580	637.3	74	639.9	49	197	1.06

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICCPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-3251	DA= 1.20 SQ MI = 768 AC						USGS QUAD-WARREN					LATITUDE 42-11-58		LONGITUDE 72-09-50			
SITE RATING (1)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.80 IN, PEAK FLOW = 349 CFS					
786.4	0	0.0		3		6.4	812.4	E	266	4.1	1880	814.8	20	817.5	38	131	*****
801.2	100	1.6	5390	11	5017C	21.2	813.7	E	288	4.5	1870	816.0	21	818.5	39	138	0.24
814.0	288	4.5	2360	19	3575C	34.0	820.5	E	439	6.8	1550	823.0	26	825.3	45	198	0.47
829.1	665	10.3	1520	31	3294C	49.2	833.6	E	819	12.8	1230	836.1	35	838.5	59	352	0.77
840.3	1041	16.2	1190	37	3346C	60.3	842.8	E	1149	18.0	1080	845.3	43	847.4	67	486	0.95
842.5	1126	17.6	1150	40	3254C	62.5	845.0	E	1239	19.4	1050	847.5	46	849.6	70	525	0.98
SITE-CP-3252	DA= 1.10 SQ MI = 704 AC						USGS QUAD-WARREN					LATITUDE 42-11-52		LONGITUDE 72-11-56			
SITE RATING (3)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.80 IN, PEAK FLOW = 320 CFS					
655.2	0	0.0		1		11.2	683.5	E	243	4.1	940	686.0	25	689.0	45	35	*****
675.5	100	1.7	2450	12	20460	31.5	684.0	E	251	4.3	980	686.4	25	688.5	45	34	0.24
680.8	179	3.0	1620	18	1645C	36.8	687.3	E	332	5.6	880	689.8	30	692.0	48	41	0.34
687.9	338	5.8	1020	27	1262C	43.9	692.4	E	487	8.3	710	694.8	40	697.0	53	54	0.50
692.5	481	8.2	790	35	1082C	48.5	695.0	E	585	10.0	650	697.5	45	699.5	55	61	0.62
SITE-CP-3253	DA= 0.79 SQ MI = 506 AC						USGS QUAD-WARREN					LATITUDE 42-11-52		LONGITUDE 72-13-33			
SITE RATING (2)	STREAM WATER QUALITY (B)						100-YR PRIN SPWY DESIGN STORM					RUNOFF = 7.80 IN, PEAK FLOW = 230 CFS					
625.7	0	0.0		2		5.6	649.0	E	175	4.1	1310	651.5	17	654.7	35	36	*****
644.5	109	2.5	2160	11	2130C	24.5	647.0	E	145	3.5	1620	649.4	15	651.0	31	27	0.21
652.5	228	5.4	1440	18	1794C	32.5	655.0	E	282	6.6	1160	657.5	23	659.2	39	52	0.35
663.0	466	11.1	1190	26	2114C	43.0	665.5	E	538	12.8	1030	667.9	27	669.7	50	112	0.52
671.5	704	16.7	1110	31	2529C	51.5	674.0	E	793	18.7	990	676.4	42	678.7	59	198	0.62
672.5	738	17.5	1110	33	2462C	52.5	675.0	E	829	19.7	990	677.4	45	679.9	60	213	0.65

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-UPPER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3254 DA= 0.80 SQ MI = 512 AC — USGS QUAD-WARREN — LATITUDE 42-12-31 LONGITUDE 72-07-59																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 230 CFS																
608.3	0	0.0		3		3.3	622.4 E	177	4.1	900	624.8	25	627.8	23	21	*****
618.8	100	2.3	1710	17	1024C	13.7	621.3 E	153	3.5	1110	623.7	23	625.3	20	16	0.21
626.3	261	6.1	950	26	941C	21.2	628.8 E	338	7.8	740	631.2	32	633.2	28	33	0.37
636.3	583	13.7	680	37	1066C	31.2	638.8 E	685	16.1	580	641.2	42	643.7	39	70	0.59
644.0	906	21.2	590	46	1160C	39.0	646.5 E	1031	24.2	520	649.0	53	651.7	47	114	0.70
647.5	1067	25.0	570	51	1207C	42.5	650.0 E	1203	28.2	510	652.4	59	655.2	50	138	0.73
SITE-CP-3255 DA= 0.89 SQ MI = 570 AC — USGS QUAD-NORTH BROOKFIELD — LATITUDE 42-17-58 LONGITUDE 72-03-48																
SITE RATING (2) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 259 CFS																
881.8	0	0.0		3		2.8	895.5 E	197	4.1	890	897.8	52	900.3	21	18	*****
892.5	100	2.0	2000	24	840C	13.6	895.0 E	180	3.8	1110	897.5	51	899.3	20	16	0.21
897.5	281	5.9	1060	51	587C	18.6	900.0 E	428	9.0	700	902.4	83	904.5	26	28	0.41
902.9	643	13.6	670	88	491C	23.9	905.4 E	895	18.9	480	906.6	119	909.1	30	46	0.65
907.9	1187	25.0	510	128	467C	28.9	910.4 E	1536	32.4	390	910.9	148	913.4	34	74	0.81

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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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LEGEND

WATERSHED BOUNDARY

DRAINAGE AREA ABOVE STRUCTURE

POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE

EXISTING POND OR RESERVOIR

3207 3256 3258 3204 3260 3206 3205 3282 3262 3264 3259 3257 3210 3203 3201 3202 3263 3208 3211 3261 3255 3217 3209 3283 3215 3267 3269 3222 3221 3265 3266 3285 3270 3220 3268 3219 3218

MATCH SHEET 2

MATCH SHEET 2

UPPER QUABOAG RIVER (CP-32)

CHICOPEE STUDY AREA

MASSACHUSETTS

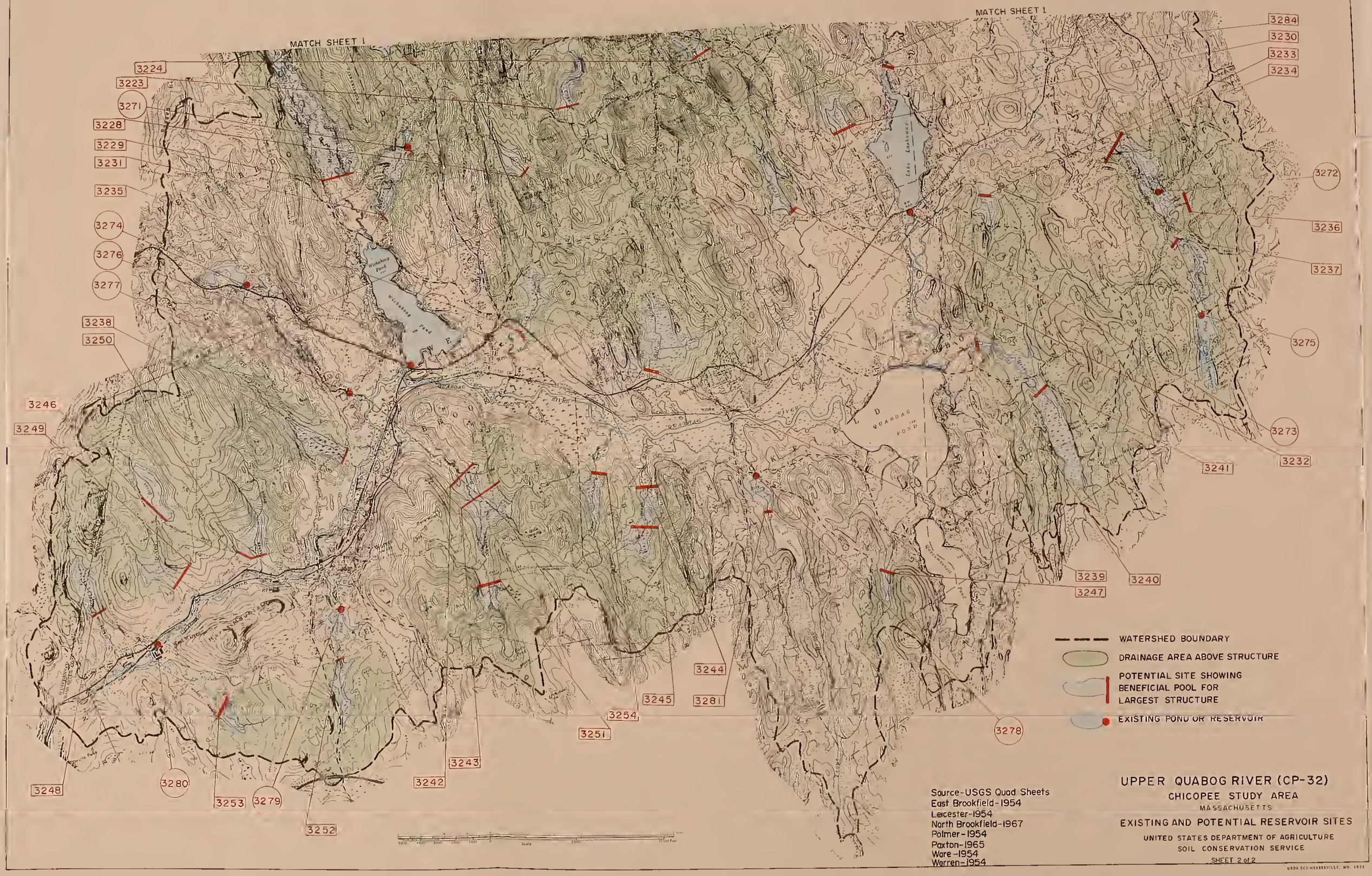
EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

SHEET 1 of 2

USDA-SCS-HYATTSVILLE, MD 1973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Wickaboag Pond
Lake Lashaway
QUABOAG RIVER
QUABOAG POND
WATERSHED BOUNDARY
DRAINAGE AREA ABOVE STRUCTURE
POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE
EXISTING POND OR RESERVOIR
Source-USGS Quad Sheets
East Brookfield-1954
Leicester-1954
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UPPER QUABOG RIVER (CP-32)
CHICOPEE STUDY AREA
MASSACHUSETTS
EXISTING AND POTENTIAL RESERVOIR SITES
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SHEET 2 of 2
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CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-33, Lower Quaboag River

This subwatershed covers 42,100 acres in the Towns of Brimfield, Monson, Palmer and Wales (Hampden County) and Warren (Worcester County). There is a U.S. Geological Survey stream gaging station on the Quaboag River in west Brimfield.

The Quaboag River flows southerly, then westerly through Warren, Brimfield, Palmer and Monson. The major tributary is Chicopee Brook which originates in Monson and flows northerly to the confluence. Elevations range from a high of about 1260 in Wales to a low of about 310 in Palmer. Geology of the subwatershed is characterized as schist, granitic or gneiss bedrock overlain by 10 to 50 feet of outwash sand and gravel, englacial drift or glacial till.

Thirty potential reservoir sites and six existing reservoir sites were studied.

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SITE CP-3301

Location: In a wetland area about 400 feet north of Rondeau Street in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°12'40" Longitude: 72°16'47"

Facilities Affected: None below elevation 665.

Geologic Conditions: Both abutments are thin discontinuous deposits of englacial drift. There are rock outcrops on both abutments. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be good. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3302

Location: On Kings Brook about 2500 feet upstream from Warren Street in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°11'48" Longitude: 72°17'05"

Facilities Affected:

Facility	Elevation
Rondeau Road	638
Utility poles	638

Geologic Conditions: Both abutments are outwash sand and gravel with some thin englacial drift. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3303

Location: On Tufts Brook about 500 feet upstream from the Massachusetts Turnpike in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°10'52" Longitude: 72°14'13"

Facilities Affected:

Facility	Elevation
Reed Street	680
Utility poles	680

Geologic Conditions: Both abutments are outwash sand and gravel and may be shallow to bedrock. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located .

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3304

Location: On an unnamed brook about 450 feet east of Keyes Road in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°10'51" Longitude: 72°10'46"

Facilities Affected: None below elevation 935.

Geologic Conditions: Both abutments are thin englacial drift with granitic bedrock outcropping at the toe of the right abutment. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location. There is a rock-fill dam at the site.

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SITE CP-3305

Location: On an unnamed stream about 2400 feet downstream from the Massachusetts Turnpike entrance road in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°10'13" Longitude: 72°20'18"

Facilities Affected: None below elevation 405.

Geologic Conditions: The left abutment is outwash sand and gravel. The right abutment is thin discontinuous glacial till with road waste-fill on part of the abutment. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be fair. Leakage is expected through the left abutment. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

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SITE CP-3306

Location: On Kings Brook about 1800 feet upstream from the Massachusetts Turnpike in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°10'14" Longitude: 72°16'36"

Facilities Affected: None below elevation 555.

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 35 to 45 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location. There is a small breached dam at the site.

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SITE CP-3308

Location: On Taylor Brook about 3400 feet downstream from Brimfield Road (Route 19) in Warren, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°10'01" Longitude: 72°12'06"

Facilities Affected:

Facility	Elevation
Two houses	865
Garage, dairy plant	860
Two houses	855
Garage	850
Dairy barn	848
Route 19	848
Utility poles	848
Garage	845

Geologic Conditions: The right abutment is glacial till; probably shallow to bedrock. The left abutment is poorly graded fine sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 40 to 50 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3309

Location: On Taylor Brook about 250 feet upstream of Warren Road (Route 19) in Brimfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°09'39" Longitude: 72°12'36"

Facilities Affected:

Facility	Elevation
High tension lines	890
Brimfield Road	888
Warren Road	885
Utility poles	885

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3310

Location: On Taylor Brook about 50 feet upstream from Brimfield Road in Brimfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°09'24" Longitude: 72°13'01"

Facilities Affected:

Facility	Elevation
Brimfield Road	all

Geologic Conditions: Both abutments are outwash fine sand with some gravel. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3311

Location: On Penny Brook about 2000 feet downstream from John Hales Road in Brimfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°09'40" Longitude: 72°15'00"

Facilities Affected:

Facility	Elevation
House, swimming pool	675
House, garage	665
John Hales Road	663
Utility poles	663

Geologic Conditions: The right abutment is thin discontinuous englacial drift underlain by granitic bedrock. The right abutment is granitic bedrock at the toe with outwash gravel high on the slope. Bedrock outcrops are moderately fractured. Depth to bedrock in the foundation is estimated to be less than 5 feet. Waterholding capabilities appear to be good. There may be leakage through the gravel on the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3312

Location: On Bottle Brook about 400 feet upstream from Dunhamptown-Palmer Road in Brimfield, Mass.

Warren, Mass, USGS quadrangle

Latitude: 42°09'10" Longitude: 72°14'50"

Facilities Affected:

Facility	Elevation
Dunhamptown-Palmer Road	710
Utility poles	710

Geologic Conditions: Both abutments are glacial till and probably shallow to schist bedrock. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3314

Location: On an unnamed brook about 600 feet downstream from Old Reed Road in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°07'49" Longitude: 72°16'32"

Facilities Affected:

Facility	Elevation
Summer cottage	540
Old Reed Road	535
Utility poles	535

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3315

Location: On an unnamed brook about 300 feet upstream from St. Clare Road in Brimfield, Mass.

Warren, Mass. USGS quadrangle

Latitude: 42°07'52" Longitude: 72°14'37"

Facilities Affected:

Facility	Elevation
Dunhamptown-Brimfield Road	835
Utility poles	835

Geologic Conditions: Both abutments are glacial till and are probably shallow to bedrock. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3316

Location: On Foskett Mill Stream about 200 feet upstream from Monson Road in Brimfield, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°07'04" Longitude: 72°15'30"

Facilities Affected:

Facility	Elevation
House	550
Two houses	540
House	530
Sutcliff Road	515
Utility poles	500

Geologic Conditions: Both abutments are ice contact sand and gravel. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

Public Ownership: The southern edge of the pool would extend into the Brimfield State Forest.

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SITE CP-3317

Location: On an unnamed brook about 2400 feet upstream from Margaret Street in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°06'48" Longitude: 72°19'51"

Facilities Affected

Facility	Elevation
House	575
House, swimming pool	570
Two houses	570
House	565
Upper Palmer Road	565

Geologic Conditions: Both abutments are glacial till. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3318

Location: On an unnamed brook about 450 feet upstream from Wilbraham Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°06'24" Longitude: 72°20'10"

Facilities Affected: None below elevation 665.

Geologic Conditions: The right abutment is glacial till. The left abutment is outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3319

Location: On Foskett Mill Stream about 800 feet downstream from the Monson-Brimfield town line in Brimfield, Mass; at Dean Pond.

Monson, Mass. USGS quadrangle

Latitude: 42°06'03" Longitude: 72°16'07"

Facilities Affected:

Facility	Elevation
Boat house	670
Locker room building	670
Picnic area	670
Sutcliff Road	650
Utility poles	650

Geologic Conditions: The left abutment, an esker, is pervious sand and gravel. The right abutment is ice contact sand and gravel at the toe with glacial till high on the slope. Bedrock outcrops in the foundation. Waterholding capabilities appear to be poor. Leakage is expected through the abutments. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Dean Pond, operated by the Department of Natural Resources, is located at the site. Waterholding capabilities above the level of Dean Pond appear to be poor.

Public Ownership: The entire site is located within the Brimfield State Forest.

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SITE CP-3320

Location: On an unnamed brook about 1900 feet downstream from Woodman Pond in Brimfield, Mass.

Wales, Mass. USGS quadrangle

Latitude: 42°05'59" Longitude: 72°14'54"

Facilities Affected:

Facility	Elevation
Dearth Hill Road	975

Geologic Conditions: Both abutments are glacial till and probably shallow to bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

Public Ownership: The entire site is located within the Brimfield State Forest.

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SITE CP-3321

Location: On Foskett Mill Stream about 1300 feet upstream from Dean Pond in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°05'42" Longitude: 72°16'35"

Facilities Affected: None below elevation 720.

Geologic Conditions: Both abutments are glaciall till with a gravel bar in the foundation area. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be fair. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the gravel bar in the foundation.

Public Ownership: The dam site is located within the Brimfield State Forest.

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SITE CP-3322

Location: On an unnamed brook about 200 feet upstream from Woodman Pond in Brimfield, Mass.

Wales, Mass. USGS quadrangle

Latitude: 42°05'33" Longitude: 72°14'57"

Facilities Affected: None below elevation 1005.

Geologic Conditions: The right abutment is glacial till. The left abutment is outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 5 to 10 feet. Waterholding capabilities appear to be fair. Leakage is expected through the left abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The site will require a dike west of the main dam. The right abutment of the dike is recommended for the emergency spillway location.

Public Ownership: The dike, part of the dam, and a small area of the reservoir would be in the Brimfield State Forest.

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SITE CP-3323

Location: On an unnamed stream about 1000 feet upstream from Bumstead Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°04'30" Longitude: 72°19'46"

Facilities Affected:

Facility	Elevation
House	645

Geologic Conditions: Both abutments are sand and gravel. Depth to bedrock in the foundation is estimated to be from 30 to 35 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3324

Location: On an unnamed brook about 1300 feet downstream from Bumstead Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°04'13" Longitude: 72°19'28"

Facilities Affected:

Facility	Elevation
House	630
Barn	625
Pond	625
Six houses	620
Three houses	615
Trailer	612
House	610
Bumstead Road	608
Utility poles	608
Gas line	608
Horse barn	607
Brogan Road	607
Utility poles	607
Shed	605
Calkins Pond	605

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 40 to 50 feet. Water-holding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3325

Location: On Chicopee Brook about 3500 feet upstream from Route 32 in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°04'06" Longitude: 72°18'52"

Facilities Affected:

Facility	Elevation
Two houses	497
Route 32	497
House and trailer	495
Trailer	490
Monson Sand and Gravel Plant	490

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 40 to 50 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

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SITE CP-3327

Location: On an unnamed stream about 900 feet downstream from McBride Road in Wales, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°04'10" Longitude: 72°15'49"

Facilities Affected:

Facility	Elevation
Farm buildings	952
McBride Road	949
Utility poles	949
Gas pipeline	948

Geologic Conditions: The right abutment is poorly graded sand and gravel outwash. The left abutment is glacial till with outwash material at the toe. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the right abutment.

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SITE CP-3328

Location: On Vinica Brook about 1500 feet upstream from Moulton Hill Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°03'50" Longitude: 72°16'46"

Facilities Affected:

Facility	Elevation
Norcross Wildlife Pond #3	846
Garage	840
Sanctuary Museum	840
House	840
Norcross Wildlife Pond #2	835
House	832
Norcross Wildlife Pond #1	817
Sanctuary Road	808

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash with large boulders. Depth to bedrock in the foundation is estimated to be from 20 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site;impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: A large portion of the site is in the Tupper Hill Wildlife Sanctuary.

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SITE CP-3329

Location: On an unnamed brook about 1550 feet upstream from Monson Road in Wales, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°03'53" Longitude: 72°15'58"

Facilities Affected:

Facility	Elevation
Gas pipeline	947
McBride Road	942
Utility poles	942

SITE CP-3329 (continued)

Geologic Conditions: Both abutments are glacial till. There are granite gneiss outcrops high on the right abutment. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

Public Ownership: About 25% of the drainage area is in the Brimfield State Forest.

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SITE CP-3330

Location: On Vinica Brook about 3750 feet upstream from Moulton Hill Road in Wales, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°03'36" Longitude: 72°16'33"

Facilities Affected:

Facility	Elevation
Norcross Wildlife Pond #3	846
Garage	840
Sanctuary Museum	840
House	840
Norcross Wildlife Pond #2	835
House	832
Norcross Wildlife Pond #1	817
Tupper Hill Sanctuary Road	808

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be required at this site.

Public Ownership: The site is in the Tupper Hill Wildlife Sanctuary and the northern tip of the drainage area is in the Brimfield State Forest.

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SITE CP-3331

Location: On Vinica Brook about 1200 feet upstream from the Monson-Wales town line in Wales, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°03'23" Longitude: 72°16'07"

Facilities Affected:

Facility	Elevation
Sanctuary Museum	850
All facilities affected by Site CP-3330	

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Bedrock outcrops on the left side of the valley. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site.

Public Ownership: The site is in the Tupper Hill Wildlife Sanctuary and the northern tip of the drainage area is in the Brimfield State Forest.

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SITE CP-3332

Location: On Vinica Brook about 300 feet downstream from Vinica Pond in Wales, Mass.

Wales, Mass. USGS quadrangle

Latitude: 42°02'55" Longitude: 72°14'53"

Facilities Affected: None below elevation 995.

Geologic Conditions: The right abutment is poorly graded outwash sand and gravel. The left abutment is glacial till. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be fair. Leakage is expected through the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities might be improved by a cutoff through the sand and gravel in the right abutment.

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SITE CP-3333

Location: On Vinica Brook about 2000 feet upstream from Tupper Hill Wildlife Sanctuary Pond #3 in Wales, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°02'37" Longitude: 72°15'17"

Facilities Affected: None below elevation 970.

Geologic Conditions: The right abutment is glacial till. The left abutment is glacial till at lower elevations and granite gneiss at higher elevations. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

Public Ownership: The entire site is within the Tupper Hill Wildlife Sanctuary.

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SITE CP-3319 (Dean Pond)

Location: On Foskett Mill Stream about 900 feet downstream of the Monson-Brimfield town line in Brimfield, Mass.

Monson, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
665	10	20	900	1.4

Potential for Expansion: Please refer to Site Data and Design Summary Table for Potential Site CP-3319 for details.

Remarks: The dam is a 50 foot long earth-fill structure with an 8 foot top width. The spillway is a 15 foot wide stone masonry structure. The outlet channel is a series of 5 masonry steps.

Ownership and Use: The site is owned by the Massachusetts Department of Natural Resources and is used primarily for recreation.

SITE CP-3334 (Palmer Reservoir)

Location: On an unnamed brook about 1100 feet east of Breckenridge Street in Palmer, Mass.

Palmer, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
523	10	15	300	0.5

Potential for Expansion: Size of the pool could be at least doubled as a pumped storage water supply reservoir. The small drainage area limits expansion as a normal stream reservoir.

Remarks: The dam is a 300 foot long earth-fill structure with a 24 foot top width. A 10 foot wide chute spillway is located on the right abutment.

Ownership and Use: The site is owned by the Town of Palmer and is used as a water supply reservoir.

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SITE CP-3335 (American Standard Dam)

Location: On Chicopee Brook near the American Standard Industries building in Monson, Mass.

Monson, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
	15	15	13,700	21.4

Potential for Expansion: Limited; an industrial complex surrounds the dam.

Remarks: The dam is a concrete weir with the downstream slope acting as a chute. A gated outlet is located at the left end of the dam. The concrete is spalling at the crest of the weir and downstream edge of the chute. There are cracks in the concrete of the chute.

Ownership and Use: The site is owned by the American Standard Corporation and is used for industrial purposes.

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SITE CP-3336
(Paradise Lake)

Location: On an unnamed tributary of Chicopee Brook at Paradise Lake Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
701	20	4	200	0.3

Potential for Expansion: Limited; a residential area surrounds the lake. The small drainage area also limits the potential for expansion.

Remarks: The dam is a stone masonry structure with a drop inlet chute spillway. The spillway weir is 4 feet long and the chute outlet channel is 2 feet wide. The outlet channel is clogged with heavy brush. The concrete is spalling, crumbling, and the dam is leaking.

Ownership and Use: The site is owned by Clare E. Easton and is used primarily for recreation.

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SITE CP-3337
(Conant Brook Reservoir)

Location: On Conant Brook near Wales Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
flood pool 757	flood pool 141	83	5050	7.9

Potential for Expansion: Steep topography limits any significant increase in surface area.

Remarks: The dam is a 1000 foot long earth-fill structure with a 16 foot top width. Both slopes are riprapped. The principal spillway is a gate control structure. The emergency spillway is a concrete ogee weir located on the left abutment. The flood pool has a capacity of 3740 acre-feet.

Ownership and Use: The site is owned by the U.S. Army Corps of Engineers and is used for flood protection.

SITE CP-3338
(Calkins Pond)

Location: On an unnamed tributary to Chicopee Brook near Bumstead Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
607	10	8	400	0.6

Potential for Expansion: The pond could be expanded to about 40 acres; Bogans Road would be affected. The small drainage area limits the potential for expansion.

Remarks: The dam is an earth-fill structure with a 20 foot wide concrete weir section in the center. The weir has flashboards. There is also a 12-inch pond drain. The dam is well maintained.

Ownership and Use: The site is owned by Jurczyk, Inc. and is used primarily for recreation.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3301 DA= 0.69 SQ MI = 442 AC USGS QUAD-PALMER LATITUDE 42-12-40 LONGITUDE 72-16-47																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 201 CFS																
643.0	0	0.0		6		1.0	649.4 E	153	4.1	1020	651.7	51	654.5	13	14	*****
648.0	100	2.7	2150	34	636C	6.1	650.5 E	207	5.6	1040	653.2	57	655.9	14	15	0.20
651.0	218	5.9	1290	48	585C	9.0	653.5 E	355	9.7	790	655.5	66	658.0	16	22	0.32
655.2	454	12.3	860	65	604C	13.2	657.7 E	633	17.2	620	659.3	81	661.8	20	36	0.48
657.5	614	16.7	840	74	697C	15.5	657.5 T	619	16.7	830	660.0	84	663.9	22	46	0.55
SITE-CP-3302 DA= 1.57 SQ MI = 1005 AC USGS QUAD-PALMER LATITUDE 42-11-48 LONGITUDE 72-17-05																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 299 CFS																
591.0	0	0.0		4		11.0	605.8 E	347	4.1	660	608.2	41	610.0	30	35	*****
598.3	100	1.2	2200	24	922C	18.2	600.8 E	181	2.2	1210	603.3	34	604.7	25	22	0.26
608.2	432	5.1	760	41	797C	28.2	610.7 E	553	6.6	600	613.2	49	614.5	35	48	0.67
621.2	1097	13.1	500	60	913C	41.2	623.7 E	1264	15.1	440	626.2	67	627.8	48	108	1.13
631.0	1761	21.0	420	76	971C	51.0	633.5 E	1973	23.6	370	635.9	90	637.7	58	177	1.37
635.2	2093	25.0	390	88	942C	55.1	637.7 E	2334	27.9	350	640.0	102	642.0	62	215	1.43
SITE-CP-3303 DA= 6.36 SQ MI = 4070 AC USGS QUAD-WARREN LATITUDE 42-10-52 LONGITUDE 72-14-13																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 1253 CFS																
669.5	0	0.0		51		0.6	685.0 E	2071	6.1	460	687.5	196	691.0	22	176	*****
670.7	100	0.3	8980	89	1009C	1.7	670.7 T	151	0.4	5950	683.7	170	687.0	18	123	0.37
678.5	981	2.9	1400	137	1004C	9.5	691.0 E	3253	9.6	420	693.4	232	698.7	30	309	1.90
688.9	2744	8.1	620	205	829C	19.9	697.4 E	4749	14.0	360	699.8	269	703.8	35	423	3.59
696.5	4506	13.2	440	250	795C	27.5	696.5 T	4557	13.3	440	700.0	270	701.8	33	376	4.59

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-3304 DA= 0.48 SQ MI = 307 AC USGS QUAD-WARREN LATITUDE 42-10-51 LONGITUDE 72-10-46																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 140 CFS																
914.1	0	0.0		3		2.2	924.0 E	106	4.1	830	926.5	24	929.5	18	7	*****
924.0	100	3.9	1190	19	6360	12.0	926.5 E	157	6.1	760	928.8	28	931.0	19	8	0.18
925.1	124	4.9	1030	21	6090	13.2	927.6 E	187	7.3	690	929.9	30	932.1	20	9	0.20
926.3	149	5.8	1120	23	7190	14.2	926.3 T	153	6.0	1090	930.0	30	931.1	19	8	0.21
927.5	178	6.8	1410	25	9810	15.5	927.5 T	182	7.1	1380	930.0	30	932.0	20	9	0.25
SITE-CP-3305 DA= 1.28 SQ MI = 819 AC USGS QUAD-PALMER LATITUDE 42-10-13 LONGITUDE 72-20-18																
SITE RATING (2) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 372 CFS																
372.2	0	0.0		3		7.1	397.7 E	283	4.1	970	400.0	26	402.7	38	44	*****
387.7	106	1.6	3310	11	30600	22.7	387.7 T	116	1.7	3020	396.7	22	399.5	34	35	0.26
390.7	143	2.0	2900	14	30050	25.7	390.7 T	153	2.2	2710	399.6	25	402.2	37	42	0.32
395.1	216	3.2	1990	19	22080	30.0	395.1 T	226	3.3	1900	399.9	26	402.0	37	42	0.40
397.5	266	3.9	2300	22	27170	32.5	397.5 T	276	4.0	2210	400.0	26	402.0	37	42	0.47
SITE-CP-3306 DA= 3.23 SQ MI = 2067 AC USGS QUAD-PALMER LATITUDE 42-10-14 LONGITUDE 72-16-36																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 563 CFS																
464.9	0	0.0		4		9.8	502.2 E	808	4.6	690	504.7	51	506.5	52	115	*****
479.0	104	0.6	3120	12	26630	24.1	481.5 E	171	1.0	1900	484.0	19	485.5	31	31	0.33
502.7	804	4.6	880	47	15030	47.8	505.2 E	952	5.5	740	507.7	56	509.2	54	133	1.30
524.5	2205	12.8	530	81	14470	69.5	527.0 E	2440	14.2	480	529.4	89	530.8	76	323	2.28
545.2	4307	25.0	380	125	13200	90.1	547.7 E	4655	27.0	360	550.0	138	551.4	96	624	2.95

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3308	DA= 1.77 SQ MI = 1133 AC		USGS QUAD-WARREN									LATITUDE 42-10-01		LONGITUDE 72-12-06			
SITE RATING (3)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM									RUNOFF = 7.80 IN, PEAK FLOW = 515 CFS					
825.5	0	0.0		7		3.5	841.1	E	392	4.1	530	843.6	46	846.3	24	22	*****
832.5	100	1.1	2690	22	1224C	10.5	845.0	E	559	5.9	480	847.3	53	850.5	29	33	0.27
843.5	477	5.0	810	46	842C	21.5	850.0	E	828	8.8	460	852.4	67	855.0	33	47	0.75
855.9	1230	13.0	560	80	857C	33.9	858.4	E	1456	15.3	470	860.9	98	863.3	41	89	1.26
867.1	2360	25.0	690	122	1344C	45.2	867.1	T	2374	25.2	690	870.0	132	872.0	50	164	1.62
SITE-CP-3309	DA= 1.10 SQ MI = 704 AC		USGS QUAD-WARREN									LATITUDE 42-09-39		LONGITUDE 72-12-36			
SITE RATING (3)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM									RUNOFF = 7.70 IN, PEAK FLOW = 316 CFS					
871.3	0	0.0		4		11.3	884.6	E	243	4.1	1280	887.1	39	890.3	30	42	*****
879.6	100	1.7	3160	20	1545C	19.7	884.1	E	226	3.9	1400	886.6	38	888.6	29	34	0.24
885.8	272	4.6	1630	36	1250C	25.7	888.3	E	379	6.5	1180	890.8	50	892.8	33	55	0.43
893.1	617	10.5	1090	61	1098C	33.2	895.6	E	794	13.5	840	898.0	84	900.8	41	116	0.71
897.5	920	15.7	1000	81	1130C	37.5	897.5	T	929	15.7	990	900.0	93	902.0	42	128	0.86
SITE-CP-3310	DA= 0.69 SQ MI = 442 AC		USGS QUAD-WARREN									LATITUDE 42-09-24		LONGITUDE 72-13-01			
SITE RATING (3)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM									RUNOFF = 7.70 IN, PEAK FLOW = 198 CFS					
890.1	0	0.0		3		3.2	899.0	E	153	4.1	1250	901.5	36	904.5	18	19	*****
897.4	100	2.7	2250	24	923C	10.3	899.9	E	175	4.6	1290	902.3	38	904.5	18	20	0.20
900.4	189	5.1	1550	33	875C	13.3	902.9	E	287	7.8	1020	905.3	47	907.9	21	30	0.29
904.9	366	10.0	1090	46	877C	17.9	907.4	E	494	13.3	810	909.8	59	912.6	26	53	0.43
907.5	493	13.3	1050	53	977C	20.5	907.5	T	499	13.6	1030	910.0	60	912.0	25	49	0.50

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3311 DA= 0.83 SQ MI = 531 AC USGS QUAD-WARREN LATITUDE 42-09-40 LONGITUDE 72-15-00																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 238 CFS																
643.0	0	0.0		4		3.0	658.4 E	184	4.1	1110	660.7	19	663.0	23	22	*****
653.5	100	2.3	2030	14	1428C	13.5	656.0 E	144	3.3	1410	658.4	17	660.5	20	16	0.21
663.0	268	6.0	1240	21	1564C	23.1	665.5 E	330	7.3	1010	668.0	26	670.0	30	41	0.39
675.7	603	13.6	960	32	1820C	35.7	678.2 E	692	15.6	830	680.5	36	682.7	43	97	0.61
684.8	939	21.2	810	45	1705C	44.8	687.3 E	1063	24.0	720	689.7	54	692.0	52	159	0.73
687.5	1066	24.1	850	50	1808C	47.5	687.5 T	1072	24.2	840	690.0	55	692.0	52	158	0.75
SITE-CP-3312 DA= 0.63 SQ MI = 403 AC USGS QUAD-WARREN LATITUDE 42-09-10 LONGITUDE 72-14-50																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 181 CFS																
700.5	0	0.0		1		10.5	727.9 E	139	4.1	2240	730.2	13	733.0	43	55	*****
724.8	100	3.0	3250	10	3106C	34.8	727.3 E	132	3.9	2450	729.7	13	731.3	41	49	0.18
733.7	213	6.3	2210	15	3235C	43.7	736.2 E	254	7.6	1850	738.5	17	740.2	50	85	0.30
746.4	438	13.0	1660	22	3369C	56.4	748.9 E	498	14.7	1460	751.3	24	753.3	63	175	0.45
755.8	663	19.7	1520	26	3886C	65.8	758.3 E	734	21.7	1380	760.0	28	761.4	71	267	0.54
757.5	708	21.1	1710	27	4558C	67.5	757.5 T	713	21.2	1700	760.0	28	762.0	72	276	0.55
SITE-CP-3314 DA= 0.98 SQ MI = 627 AC USGS QUAD-PALMER LATITUDE 42-07-49 LONGITUDE 72-16-32																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 285 CFS																
529.2	0	0.0		2		9.2	550.0 E	217	4.1	910	552.5	22	555.3	35	28	*****
543.2	100	1.9	2020	13	1548C	23.2	549.7 E	211	4.0	960	552.2	21	553.9	34	25	0.23
554.3	301	5.8	960	24	1228C	34.3	556.8 E	371	7.1	780	559.3	29	560.9	41	43	0.45
567.5	703	13.5	710	38	1328C	47.5	570.0 E	807	15.3	620	572.4	43	574.5	54	99	0.71
576.9	1106	21.2	620	47	1435C	56.9	579.4 E	1234	23.6	550	581.8	53	584.4	64	172	0.86
581.0	1307	25.0	600	52	1505C	61.0	583.5 E	1448	27.7	540	585.9	59	588.5	69	214	0.88

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(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3315 DA= 0.50 SQ MI = 320 AC USGS QUAD-WARREN LATITUDE 42-07-52 LONGITUDE 72-14-37																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 143 CFS																
819.3	0	0.0		1		9.3	837.8 E	111	4.1	2410	840.1	13	843.3	33	42	*****
837.0	100	3.8	3060	11	2777C	27.0	839.5 E	133	5.0	2290	842.0	15	843.5	34	43	0.18
840.0	134	5.0	2710	13	2821C	30.0	842.5 E	174	6.5	2090	844.9	17	846.5	37	55	0.21
844.5	202	7.6	2300	17	2791C	34.5	847.0 E	250	9.3	1860	849.5	21	851.5	42	81	0.27
847.5	254	9.5	2480	19	3310C	37.5	847.5 T	258	9.7	2440	850.0	21	852.0	42	84	0.31
SITE-CP-3316 DA= 5.27 SQ MI = 3373 AC USGS QUAD-MONSON LATITUDE 42-07-04 LONGITUDE 72-15-30																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 1485 CFS																
510.2	0	0.0		7		17.2	546.4 T	1166	4.1	1330	556.5	73	564.5	72	350	*****
518.5	100	0.4	8640	17	4965C	25.5	518.5 T	142	0.5	6080	533.4	38	537.4	44	97	0.36
543.5	978	3.5	1400	52	2603C	50.5	543.5 T	1020	3.5	1340	556.5	73	560.5	67	295	1.77
567.9	2735	9.7	840	96	2407C	74.9	567.9 T	2777	9.8	830	582.9	128	587.2	94	796	3.26
583.5	4491	16.0	580	129	2008C	90.5	583.5 T	4534	16.1	570	590.0	146	593.2	100	957	4.16
SITE-CP-3317 DA= 1.78 SQ MI = 1139 AC USGS QUAD-MONSON LATITUDE 42-06-48 LONGITUDE 72-19-51																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 511 CFS																
531.5	0	0.0		3		11.6	555.2 E	471	5.0	1260	557.5	44	560.9	41	135	*****
543.2	100	1.1	6740	17	3928C	23.2	543.2 T	114	1.2	5900	554.0	39	557.5	38	108	0.27
554.7	436	4.6	2050	39	2268C	34.7	563.2 E	849	8.8	1060	565.5	60	568.5	49	216	0.71
567.8	1108	11.7	1120	65	1909C	47.8	572.3 E	1447	15.2	860	574.7	85	577.3	57	339	1.20
576.5	1780	18.7	950	91	1847C	56.5	576.5 T	1794	18.9	940	580.0	103	582.4	62	431	1.49
577.5	1871	19.7	950	95	1883C	57.5	577.5 T	1885	19.9	940	580.0	103	582.0	62	423	1.51

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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3318 DA= 0.76 SQ MI = 486 AC USGS QUAD-MONSON LATITUDE 42-06-24 LONGITUDE 72-20-10																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 218 CFS																
634.0	0	0.0		3		4.0	649.9 E	168	4.1	1360	652.3	26	655.0	25	38	*****
646.2	100	2.5	2240	15	1519C	16.2	648.7 E	147	3.5	1530	651.0	22	652.5	23	29	0.21
650.2	167	4.1	1760	20	1495C	20.2	652.7 E	233	5.6	1270	655.0	34	656.9	27	46	0.29
655.0	302	7.3	1380	34	1213C	25.1	657.5 E	403	9.8	1030	659.9	48	662.3	32	77	0.41
657.5	393	9.7	1440	41	1368C	27.5	657.5 T	399	9.8	1420	660.0	49	662.0	32	75	0.47
SITE-CP-3319 DA= 1.46 SQ MI = 934 AC USGS QUAD-MONSON LATITUDE 42-06-03 LONGITUDE 72-16-07																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 419 CFS																
650.0	0	0.0		0		0.0	675.2 E	393	5.1	500	677.5	38	680.5	30	23	*****
671.3	269	3.5	940	25	1021C	21.2	679.8 E	566	7.3	450	682.2	48	685.0	35	34	0.49
676.8	438	5.6	720	36	863C	26.7	683.3 E	734	9.3	430	685.8	57	688.8	39	48	0.65
680.9	607	7.8	590	45	791C	30.9	685.4 E	846	10.8	420	687.9	62	690.5	41	56	0.81
687.3	944	12.1	730	61	1135C	37.3	687.3 T	956	12.3	720	690.0	67	692.0	42	63	1.CO
687.5	955	12.3	750	61	1171C	37.5	687.5 T	966	12.3	740	690.0	67	692.0	42	63	1.CO
SITE-CP-3320 DA= 1.31 SQ MI = 838 AC USGS QUAD-WALES LATITUDE 42-05-59 LONGITUDE 72-14-54																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 363 CFS																
955.1	0	0.0		4		5.1	970.9 E	290	4.1	1310	973.4	49	975.5	26	74	*****
965.0	100	1.4	3500	22	1626C	15.0	967.5 E	173	2.5	2020	969.9	36	971.4	21	50	0.25
971.0	284	4.1	1740	40	1247C	21.0	973.5 E	405	5.8	1220	975.9	59	977.5	27	88	0.49
978.0	652	9.3	1050	67	1031C	28.0	980.5 E	842	12.0	820	982.8	83	984.9	35	154	0.79
982.5	991	14.2	830	82	1012C	32.5	985.0 E	1214	17.4	680	987.4	96	989.6	40	209	0.98

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3321 DA= 0.85 SQ MI = 544 AC USGS QUAD-MONSON LATITUDE 42-05-42 LONGITUDE 72-16-35																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 244 CFS																	
682.4	0	0.0		3		4.4	700.8	E	188	4.1	1210	703.0	18	706.2	28	38	*****
695.0	100	2.2	2490	12	20010	17.1	701.5	E	202	4.5	1230	704.0	18	706.0	28	37	0.21
699.5	162	3.5	1860	15	19650	21.6	706.0	E	283	6.1	1070	708.5	21	710.8	33	52	0.29
706.7	287	6.3	1270	20	18380	28.7	711.2	E	390	8.6	940	713.5	24	715.5	38	69	0.41
712.4	412	9.1	1020	23	17960	34.4	714.9	E	479	10.6	880	717.4	26	719.0	41	83	0.50
712.5	414	9.1	1020	23	17970	34.5	715.0	E	481	10.6	870	717.4	26	719.2	41	83	0.50
SITE-CP-3322 DA= 0.92 SQ MI = 589 AC USGS QUAD-WALES LATITUDE 42-05-33 LONGITUDE 72-14-57																	
SITE RATING (2) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 264 CFS																	
990.5	0	0.0		5		5.5	996.5	E	204	4.1	900	998.9	82	1001.6	17	19	*****
991.5	12	0.2	12410	16	9380	6.6	994.0	E	86	1.7	1740	996.5	61	998.3	13	9	0.05
994.3	87	1.7	2490	41	5340	9.3	996.8	E	227	4.6	960	999.0	85	1001.3	16	18	0.20
995.9	162	3.3	1490	55	4400	10.8	998.4	E	337	6.8	720	1000.0	92	1001.5	17	19	0.30
997.5	264	5.4	1410	70	5310	12.5	997.5	T	271	5.5	1370	1000.0	93	1002.0	17	20	0.40
SITE-CP-3323 DA= 0.53 SQ MI = 339 AC USGS QUAD-MONSON LATITUDE 42-04-30 LONGITUDE 72-19-46																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 152 CFS																	
620.9	0	0.0		2		5.9	635.4	E	117	4.1	2080	637.9	21	641.0	26	31	*****
634.5	100	3.5	2710	15	17500	19.6	637.0	E	148	5.1	1840	639.5	23	641.4	26	32	0.18
637.0	140	5.0	2220	19	16260	22.0	639.5	E	197	7.0	1580	641.9	27	644.2	29	40	0.21
640.5	221	7.8	1690	25	15050	25.6	643.0	E	291	10.3	1280	645.4	31	647.9	33	54	0.29
642.5	269	9.5	1490	27	14720	27.5	645.0	E	346	12.3	1160	647.2	34	649.5	35	61	0.32

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	PERCENT CHANCE (MGD)
SITE-CP-3324 DA= 0.95 SQ MI = 608 AC — USGS QUAD-MONSON — LATITUDE 42-04-13 LONGITUDE 72-19-28																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.70 IN, PEAK FLOW = 273 CFS																
585.0	0	0.0		3		4.0	604.0 E	210	4.1	1210	606.5	24	609.8	29	38	*****
597.5	100	2.0	2910	12	23840	16.6	606.0 E	252	5.0	1150	608.5	27	611.0	30	43	0.23
608.0	294	5.8	1520	26	17030	27.0	610.5 E	373	7.3	1200	613.0	35	614.7	34	58	0.43
619.0	683	13.5	1300	45	19710	38.0	621.5 E	813	16.0	1090	623.9	56	626.5	45	138	0.69
627.5	1148	22.7	1160	65	20570	46.5	627.5 T	1155	22.7	1150	630.0	71	632.0	51	210	0.84
SITE-CP-3325 DA= 2.37 SQ MI = 1517 AC — USGS QUAD-MONSON — LATITUDE 42-04-06 LONGITUDE 72-18-52																
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.70 IN, PEAK FLOW = 680 CFS																
490.0	107	0.8	5150	28	20010	9.0	490.0 T	126	1.0	4370	496.9	43	499.9	19	21	0.31
491.4	149	1.2	3900	31	18880	10.3	491.4 T	168	1.2	3460	497.0	44	500.0	19	21	0.39
492.5	184	1.5	3210	33	17680	11.5	492.5 T	202	1.6	2910	497.4	45	500.0	19	21	0.46
SITE-CP-3327 DA= 0.53 SQ MI = 339 AC — USGS QUAD-MONSON — LATITUDE 42-04-10 LONGITUDE 72-15-49																
SITE RATING (2) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM — RUNOFF = 7.60 IN, PEAK FLOW = 150 CFS																
944.1	0	0.0		2		4.1	955.3 E	117	4.1	2030	957.3	40	959.5	20	24	*****
952.5	47	1.7	5610	17	15810	12.5	955.0 E	109	3.9	2430	957.5	41	959.8	20	25	0.10

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3328 DA= 5.40 SQ MI = 3456 AC USGS QUAD-MONSON LATITUDE 42-03-50 LONGITUDE 72-16-46																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.70 IN, PEAK FLOW = 1550 CFS																	
782.3	0	0.0		10		10.3	820.0	E	2063	7.1	390	822.5	106	827.5	55	207	*****
788.7	100	0.3	5980	24	25230	16.7	788.7	T	143	0.5	4180	801.5	55	805.5	34	48	0.36
808.0	1013	3.5	1070	70	15510	36.0	808.0	T	1056	3.6	1030	821.0	102	825.0	53	181	1.83
827.4	2839	9.8	570	121	13330	55.4	839.9	E	4673	16.2	340	842.4	181	846.5	75	494	3.37
842.5	5111	17.7	420	182	11750	70.5	842.5	T	5154	17.9	420	847.3	207	849.9	78	563	4.43
SITE-CP-3329 DA= 0.79 SQ MI = 506 AC USGS QUAD-MONSON LATITUDE 42-03-53 LONGITUDE 72-15-58																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.60 IN, PEAK FLOW = 224 CFS																	
915.6	0	0.0		2		5.6	934.1	E	175	4.1	1360	936.5	27	939.5	29	36	*****
930.3	100	2.4	2410	14	17770	20.2	932.8	E	147	3.5	1640	935.1	24	937.0	27	28	0.21
934.5	174	4.1	1770	22	13800	24.5	937.0	E	243	5.8	1270	939.4	33	941.4	31	43	0.30
939.8	322	7.6	1360	34	13030	29.7	942.3	E	425	10.1	1030	944.6	50	947.3	37	69	0.43
942.5	428	10.2	1190	42	12020	32.5	945.0	E	550	13.0	930	947.3	59	949.9	40	85	0.50
SITE-CP-3330 DA= 5.20 SQ MI = 3328 AC USGS QUAD-MONSON LATITUDE 42-03-36 LONGITUDE 72-16-33																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.60 IN, PEAK FLOW = 1473 CFS																	
790.7	0	0.0		10		7.6	833.4	E	1984	7.1	430	835.8	126	840.3	57	143	*****
797.5	100	0.4	5640	20	28810	14.5	797.5	T	142	0.5	3980	810.5	36	814.0	31	26	0.36
815.8	682	2.5	2010	48	28840	32.8	815.8	T	724	2.5	1900	830.5	86	838.1	55	129	1.41
832.4	1846	6.6	810	100	14810	49.4	832.4	T	1887	6.8	790	843.4	160	848.3	65	206	2.59
842.5	3191	11.5	540	160	10790	59.5	842.5	T	3232	11.7	530	847.3	163	850.0	67	220	3.49

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-LOWER QUABOAG RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3331 DA= 4.00 SQ MI = 2560 AC — USGS QUAD-MONSON — LATITUDE 42-03-23 LONGITUDE 72-16-07																	
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.60 IN, PEAK FLOW = 815 CFS																	
812.5	0	0.0		6		12.6	847.0	E	1182	5.5	790	849.5	95	852.0	52	120	*****
822.0	100	0.5	6230	15	4029C	22.0	822.0	T	132	0.6	4720	833.0	34	835.1	35	38	0.34
834.5	411	1.9	2400	38	2572C	34.5	834.5	T	443	2.0	2230	845.5	77	847.9	48	92	0.94
845.5	1033	4.8	1240	78	1641C	45.5	845.5	T	1065	5.0	1200	854.5	122	856.9	57	157	1.65
852.5	1686	7.8	840	111	1275C	52.5	852.5	T	1718	8.1	820	857.9	140	859.6	60	184	2.23
SITE-CP-3332 DA= 0.88 SQ MI = 563 AC — USGS QUAD-WALES — LATITUDE 42-02-55 LONGITUDE 72-14-53																	
SITE RATING (3) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.60 IN, PEAK FLOW = 249 CFS																	
960.0	0	0.0		0		0.0	975.8	E	221	4.6	810	978.0	44	980.8	21	15	*****
971.3	100	2.0	1720	16	1066C	11.3	973.8	E	160	3.4	1070	976.0	36	977.6	18	8	0.21
976.9	257	5.5	1050	39	694C	16.9	979.4	E	374	8.0	720	981.8	56	984.0	24	22	0.39
983.1	570	12.2	760	60	724C	23.2	985.6	E	735	15.7	590	988.0	73	990.6	31	54	0.61
987.5	855	18.2	760	71	906C	27.5	987.5	T	862	18.4	750	990.0	78	992.0	32	63	0.73
SITE-CP-3333 DA= 1.30 SQ MI = 832 AC — USGS QUAD-MONSON — LATITUDE 42-02-37 LONGITUDE 72-15-17																	
SITE RATING (1) — STREAM WATER QUALITY (B) — 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.60 IN, PEAK FLOW = 368 CFS																	
903.9	0	0.0		3		8.8	928.8	E	288	4.1	1200	931.1	29	933.4	38	58	*****
919.0	100	1.4	2880	11	2548C	24.0	921.5	E	145	2.0	1990	923.9	18	925.4	30	30	0.25
932.0	372	5.4	1350	30	1671C	37.0	934.5	E	460	6.6	1090	937.0	36	938.5	44	82	0.57
946.0	917	13.2	880	50	1606C	51.0	948.5	E	1058	15.2	770	950.9	59	952.8	58	180	0.94
959.0	1733	25.0	680	74	1597C	64.1	961.5	E	1942	28.0	610	964.0	92	966.4	71	326	1.19

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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
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LEGEND

WATERSHED BOUNDARY

DRAINAGE AREA ABOVE STRUCTURE

POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE

EXISTING POND OR RESERVOIR

Source-USGS Quad. Sheets
Wales-1967
Monson-1967
Palmer-1969
Worren-1969

LOWER QUABOAG RIVER (CP-33)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

USDA SCS-HYATTSVILLE, MD. 1973

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed CP-34, Twelvemile Brook

This subwatershed covers 9300 acres in the Towns of Monson, Palmer and Wilbraham (Hampden County).

Twelvemile Brook originates in Monson and flows northwesterly to the confluence with the Chicopee River in Wilbraham. Elevations range from a high of about 980 in Monson to a low of about 220 at the confluence. Geology of the subwatershed is characterized as granitic or gneiss bedrock overlain by 10 to 30 feet of outwash sand and gravel or englacial drift.

Nine potential reservoir sites and one existing reservoir site were studied.

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SITE CP-3401

Location: On Twelvemile Brook about 1500 feet upstream from the Penn-Central Railroad in Wilbraham, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°08'58" Longitude: 72°24'14"

Facilities Affected:

Facility	Elevation
Two houses, 2 garages, shed	285
Two houses, 2 barns	280
Five houses, 2 garages, 3 barns	272
Overhead telephone cable	270
Two houses, garage	260
Crane Hill Road	248
Utility poles	248

Geologic Conditions: Both abutments are poorly graded sand and gravel. Depth to bedrock in the foundation is estimated to be from 20 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. There is a breached dam about 100 feet upstream from the site.

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SITE CP-3402

Location: On Twelvemile Brook about 3200 feet downstream from the Monson-Wilbraham town line in Wilbraham, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°08'31" Longitude: 72°23'09"

Facilities Affected: None below elevation 345.

Geologic Conditions: The left abutment is either glacial till or sand and gravel glacial drift. The right abutment is poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 20 feet. Waterholding capabilities appear to be fair. Leakage is expected through the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. Waterholding capabilities may be improved by a cutoff through the sand and gravel on the right abutment.

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SITE CP-3403

Location: On Maxwell Brook about 1300 feet upstream from Dickinson Road in Monson, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°08'42" Longitude: 72°23'00"

Facilities Affected: None below elevation 390.

Geologic Conditions: The left abutment is poorly graded sand and gravel outwash. The right abutment is glacial till. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be poor. Leakage is expected through the left abutment. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location. There is an old breached dam at the site.

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SITE CP-3404

Location: On Maxwell Brook about 600 feet upstream from Maxwell Road in Monson, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°08'37" Longitude: 72°22'25"

Facilities Affected:

Facility	Elevation
Maxwell Road	435
Utility poles	435
House and barn	435

Geologic Conditions: The left abutment is gray gneiss bedrock overlain by thin discontinuous glacial till. The right abutment is poorly graded fine sand with boulders at the higher elevations and swamp deposits at lower elevations. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be fair. Leakage is expected through the right abutment. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3405

Location: On Thayer Brook about 1900 feet downstream from Bennett Road in Wilbraham, Mass.

Hampden, Mass. USGS quadrangle

Latitude: 42°07'22" Longitude: 72°23'03"

Facilities Affected:

Facility	Elevation
House	580
Bennett Road	575
Utility poles	575

Geologic Conditions: The left abutment is poorly graded outwash sand and gravel at lower elevations with glacial till at higher elevations. The right abutment is poorly graded outwash sand and gravel with cobbles and boulders. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3406

Location: On Twelvemile Brook about 1900 feet upstream from Silver Street in Monson, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°07'43" Longitude: 72°22'04"

Facilities Affected:

Facility	Elevation
Reimers Road	445
Utility poles	445
Freitag Pond	440

Geologic Conditions: Both abutments are either silty sand and gravel or poorly graded sand and gravel. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be fair. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be required at this site. Waterholding capabilities might be improved by a cutoff through the gravel deposit low on the right abutment.

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SITE CP-3407

Location: On Twelvemile Brook about 5000 feet upstream from Silver Street in Monson, Mass.

Palmer, Mass. USGS quadrangle

Latitude: 42°07'30" Longitude: 72°21'38"

Facilities Affected:

Facility	Elevation
House and barn	530
Garage	530
House and barn	525
Barn	520
House and garage	520
Stebbins Road	520
Reimer Road	498
Utility poles	498
High tension towers	485
Nieske Road	485
Utility poles	485
Pond	465

SITE CP-3407 (continued)

Geologic Conditions: The left abutment is poorly graded sand and gravel. The right abutment is poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be fair. Leakage is expected through the right abutment. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. Waterholding capabilities may be improved by a cutoff through the sand and gravel on the right abutment.

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SITE CP-3408

Location: On Twelvemile Brook about 3800 feet upstream from Wilbraham Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°06'04" Longitude: 72°21'43"

Facilities Affected:

Facility	Elevation
House	685
Hampden Upper Road	678
Utility poles	678
Wald Road	665
Utility poles	665

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. The right abutment is an esker deposit. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3409

Location: On Twelvemile Brook about 800 feet upstream from Wood Hill Road in Monson, Mass.

Monson, Mass. USGS quadrangle

Latitude: 42°05'55" Longitude: 72°21'22"

Facilities Affected:

Facility	Elevation
House	820
House	815
Camp	810
Peck Road	802

Geologic Conditions: Both abutments are glacial till; probably shallow to granitic bedrock. Depth to bedrock in the foundation is estimated to be from 10 to 20 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The right abutment is recommended for the emergency spillway location. If the site is developed to elevation 815, a dike will be required east of the reservoir.

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SITE CP-3410 (Pulpit Rock Pond)

Location: On Twelvemile Brook about 2800 feet upstream of the Monson-Wilbraham town line in Monson, Mass.

Ludlow, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
365	25	15	4250	6.6

Potential for Expansion: Limited; many houses line the shore. Steep topography limits any significant increase in surface area.

Remarks: The dam is a 75 foot long concrete weir structure with two stages. The low stage is a 4 foot wide by 8 foot high opening fitted with stop logs. The high stage is the top of the dam fitted with flashboards. There is a 3 foot diameter gated outlet at about the same elevation as the low stage weir.

Ownership and Use: The site is owned by Harold Mayer and the United Cooperative Bank of Springfield. The site is used primarily for recreation.

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED TWELVE MILE BROOK

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3401 DA= 13.30 SQ MI = 8512 AC USGS QUAD-LUDLOW LATITUDE 42-08-58 LONGITUDE 72-24-14																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 2853 CFS																
267.0	100	0.1	14900	19	79420	27.0	267.0 T	206	0.3	7220	281.7	45	289.9	50	125	0.43
271.7	200	0.3	6680	24	54880	31.7	271.7 T	306	0.4	4360	284.1	57	289.9	50	125	0.75
278.5	399	0.6	3500	34	41370	38.5	278.5 T	505	0.7	2760	285.5	65	289.6	50	123	1.28
282.5	563	0.8	2970	49	34160	42.5	282.5 T	669	0.8	2500	286.9	72	290.0	50	126	1.67
SITE-CP-3402 DA= 8.60 SQ MI = 5504 AC USGS QUAD-LUDLOW LATITUDE 42-08-31 LONGITUDE 72-23-09																
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 2217 CFS																
305.2	100	0.2	7190	22	32950	15.2	305.2 T	169	0.4	4260	318.2	46	325.1	35	53	0.40
316.1	435	0.8	2520	41	26500	26.0	316.1 T	504	1.1	2180	328.7	71	336.7	47	107	1.21
328.2	1106	2.4	990	70	15600	38.2	328.2 T	1175	2.5	930	339.2	100	344.0	54	160	2.30
332.7	1441	3.0	840	82	14790	42.7	332.7 T	1510	3.3	800	339.6	101	343.7	54	157	2.71
SITE-CP-3403 DA= 0.90 SQ MI = 576 AC USGS QUAD-LUDLOW LATITUDE 42-08-42 LONGITUDE 72-23-00																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 218 CFS																
340.9	0	0.0		2		10.8	358.6 E	199	4.1	1020	361.0	20	362.7	33	30	*****
352.9	100	2.0	1910	14	13560	22.9	355.4 E	144	3.0	1320	357.7	18	359.2	29	21	0.21
366.2	345	7.1	1270	22	20400	36.2	368.7 E	408	8.5	1080	371.2	24	372.5	43	81	0.47
376.5	590	12.3	1210	27	26890	46.5	379.0 E	666	13.8	1070	381.4	29	382.7	53	179	0.62
382.5	761	15.7	1160	30	29690	52.5	385.0 E	843	17.6	1050	387.4	33	388.9	59	260	0.71

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED TWELVE MILE BROOK

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3404 DA= 0.72 SQ MI = 461 AC USGS QUAD- PALMER LATITUDE 42-08-37 LONGITUDE 72-22-25																	
SITE RATING (2) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 212 CFS																	
415.4	0	0.0		4		0.4	420.2	E	159	4.1	650	422.2	61	424.9	10	8	*****
424.0	381	9.8	590	63	3530	9.0	426.5	E	551	14.2	410	428.2	71	430.7	16	19	0.45
428.2	670	17.5	420	71	4000	13.2	430.7	E	858	22.2	330	432.2	79	434.7	20	30	0.59
432.2	960	25.0	350	78	4350	17.2	434.7	E	1168	30.4	290	435.9	87	438.4	23	43	0.66
SITE-CP-3405 DA= 0.97 SQ MI = 621 AC USGS QUAD- HAMPDEN LATITUDE 42-07-22 LONGITUDE 72-23-03																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 265 CFS																	
548.0	0	0.0		4		3.0	563.5	E	215	4.1	950	565.9	25	567.8	23	33	*****
558.0	100	1.9	1980	16	12360	13.0	560.5	E	151	2.9	1310	562.9	22	564.3	19	23	0.23
565.7	258	5.0	1180	25	12140	20.7	568.2	E	332	6.4	920	570.5	31	571.9	27	48	0.41
575.5	575	11.1	940	41	13190	30.5	578.0	E	691	13.3	780	580.5	51	582.4	37	109	0.64
582.2	892	17.2	790	54	12980	37.2	584.7	E	1042	20.1	670	587.0	64	589.2	44	169	0.79
582.5	907	17.5	780	55	12970	37.5	585.0	E	1058	20.4	670	587.4	64	589.5	44	172	0.79
SITE-CP-3406 DA= 4.84 SQ MI = 3098 AC USGS QUAD- PALMER LATITUDE 42-07-43 LONGITUDE 72-22-04																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 1425 CFS																	
443.4	0	0.0		8		15.3	472.0	T	1071	4.1	990	480.2	99	487.5	59	208	*****
450.5	100	0.4	8070	20	41310	22.6	450.5	T	139	0.5	5820	465.5	52	469.5	42	89	0.35
466.4	681	2.5	1740	54	21790	38.4	466.4	T	720	2.8	1640	479.4	96	486.0	58	196	1.37
481.5	1843	7.1	750	103	13430	53.5	481.5	T	1882	7.3	740	492.0	144	498.2	70	310	2.51
492.5	3200	12.3	470	147	10190	64.5	492.5	T	3239	12.5	460	497.4	176	500.0	72	328	3.37

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED TWELVE MILE BROOK

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	STORAGE IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	STORAGE AT CREST IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3407 DA= 3.30 SQ MI = 2112 AC USGS QUAD- PALMER LATITUDE 42-07-30 LONGITUDE 72-21-38																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 972 CFS																	
468.4	0	0.0		9		5.4	495.0	E	999	5.6	390	497.4	82	500.5	38	64	*****
475.0	100	0.6	4560	20	22300	12.1	475.0	T	126	0.7	3610	490.0	55	493.9	31	41	0.32
492.7	817	4.6	680	65	8590	29.7	503.2	E	1699	9.7	330	505.5	97	508.5	46	102	1.33
509.0	2250	12.8	380	100	8560	46.0	517.5	E	3159	17.9	270	520.0	110	522.9	60	199	2.34
526.8	4400	25.0	290	184	7030	63.8	529.3	E	4923	28.0	260	531.8	224	534.3	71	329	3.01
SITE-CP-3408 DA= 0.65 SQ MI = 416 AC USGS QUAD- MONSON LATITUDE 42-06-04 LONGITUDE 72-21-43																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 191 CFS																	
661.9	0	0.0		3		3.9	673.5	E	144	4.1	740	675.8	37	678.2	20	9	*****
672.0	100	2.9	1360	21	6400	14.0	674.5	E	173	5.0	790	676.9	42	679.0	21	10	0.18
675.5	203	5.9	870	36	4920	17.6	678.0	E	312	9.0	570	680.4	56	682.8	25	14	0.30
680.2	409	11.8	620	55	4640	22.2	682.7	E	565	16.2	450	684.3	70	686.7	29	21	0.43
682.5	549	15.7	550	63	4760	24.5	685.0	E	724	20.9	420	686.4	78	688.7	31	26	0.50
SITE-CP-3409 DA= 0.48 SQ MI = 307 AC USGS QUAD- MONSON LATITUDE 42-05-55 LONGITUDE 72-21-22																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.90 IN, PEAK FLOW = 141 CFS																	
800.4	0	0.0		2		5.4	810.5	E	106	4.1	1620	812.9	25	815.5	21	15	*****
810.5	100	3.9	2060	19	11070	15.5	813.0	E	159	6.1	1300	815.3	31	817.4	22	18	0.18
814.3	190	7.3	1360	28	9080	19.2	816.8	E	273	10.7	950	818.9	40	821.0	26	27	0.26
819.4	370	14.5	950	42	8440	24.4	821.9	E	484	18.9	730	823.5	49	825.5	31	42	0.36
823.4	550	21.5	850	49	9650	28.4	825.9	E	681	26.5	690	827.1	55	829.3	34	65	0.42
825.1	640	25.0	830	52	10270	30.2	827.6	E	778	30.4	680	828.9	58	831.0	36	77	0.43

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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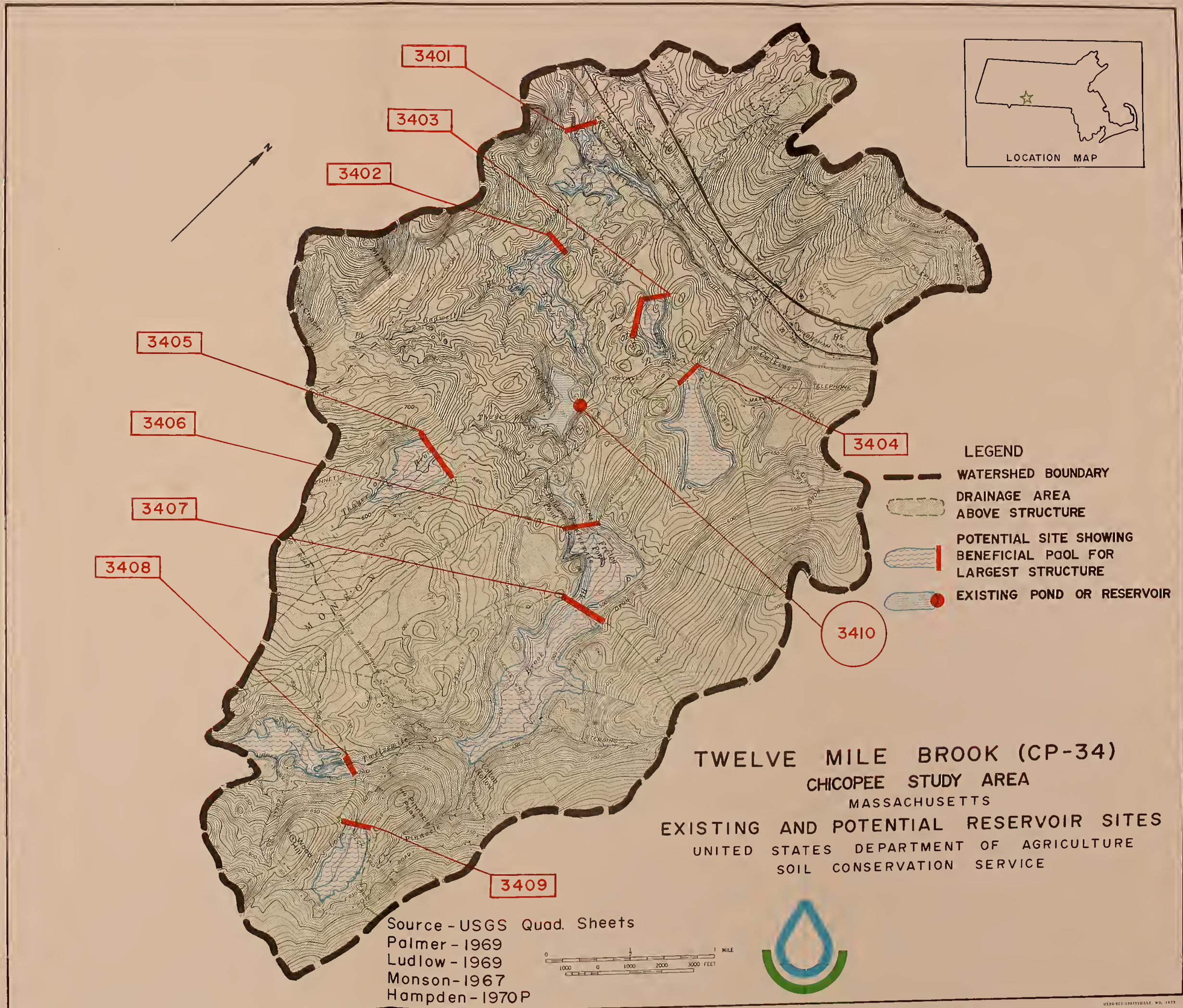
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **



TWELVE MILE BROOK (CP-34)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

USDA-SCS-HYATTSVILLE, MD. 1973

CHICOPEE STUDY AREA
SITE DATA FOR

Subwatershed Cp-35, Chicopee River

This subwatershed covers about 32,300 acres in the municipalities of Chicopee, Ludlow, Springfield and Wilbraham (Hampden County) and Granby (Hampshire County). About sixty percent of the subwatershed is urban. Westover Air Force Base is located in the subwatershed. There is a U.S. Geological Survey stream gaging station on the Chicopee River in Indian Orchard.

The Chicopee River flows westerly through the subwatershed to the confluence with the Connecticut River in Chicopee. The main tributary is Fuller Brook (Higher Brook in Ludlow) which originates in Ludlow and flows generally southwesterly to the confluence with the Chicopee River in Chicopee. Elevations range from a high of about 760 in Granby to a low of about 50 in Chicopee. Geology of the subwatershed is characterized as shale or sandstone bedrock overlain by 15 to 90 feet of poorly graded sand and gravel outwash.

Nine potential reservoir sites and ten existing reservoir sites were studied. Summary Data for Potential Upstream Reservoir Sites are included for eight sites that met study criteria.

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SITE CP-3501

Location:	On Harris Brook about 4050 feet upstream from Lyon Street in Ludlow, Mass. Springfield, Mass. USGS quadrangle Latitude: 42°12'51" Longitude: 72°28'08"
Facilities Affected:	None below elevation 310.
Geologic Conditions:	Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.
Engineering Notes:	The right abutment is recommended for the emergency spillway location.

****

SITE CP-3502

Location: On Harris Brook about 500 feet upstream from Lyon Street in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°12'14" Longitude: 72°28'13"

Facilities Affected:

Facility	Elevation
House and garage	282
Light duty road	272
House, barn, and silo	270

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 30 to 40 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3503

Location: On Harris Brook about 3700 feet upstream from Rood Street in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°11'49" Longitude: 72°28'13"

Facilities Affected: None below elevation 260.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 25 to 30 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: Preliminary structure designs indicate that a concrete emergency spillway may be needed at this site. If the site is developed to elevation 255, a dike will be required southeast of the reservoir.

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SITE CP-3504

Location: On an unnamed brook about 900 feet upstream from Church Street in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°11'31" Longitude: 72°28'18"

Facilities Affected:

Facility	Elevation
Church Street	255
Utility poles	255

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 30 to 40 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments and the foundation. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3505

Location: On Cooley Brook about 1200 feet southeast of the Westover Air Force Base boundary in Chicopee, Mass.

Springfield-North, Mass. USGS quadrangle

Latitude: 42°11'15" Longitude: 72°31'43"

Facilities Affected:

Facility	Elevation
Chicopee Country Club	200

Geologic Conditions: Both abutments are poorly graded to well graded sand with some gravel. Depth to bedrock in the foundation is estimated to be from 80 to 90 feet. Waterholding capabilities appear to be poor to fair depending on the gradation of the sand and gravel in the abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location.

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SITE CP-3506

Location: On an unnamed stream at the abandoned railroad bed about 800 feet northeast of Moore Street in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°11'16" Longitude: 72°24'52"

Facilities Affected: None below elevation 319.

Geologic Conditions: Both abutments are poorly graded sand and gravel outwash. Depth to bedrock in the foundation is estimated to be from 15 to 25 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3508

Location: On Higher Brook about 900 feet upstream from the Ludlow Gun Club Road in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°10'32" Longitude: 72°27'19"

Facilities Affected:

Facility	Elevation
Springfield Reservoir Aqueduct	238

Geologic Conditions: Both abutments are poorly graded outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 30 to 35 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The right abutment is recommended for the emergency spillway location. A dike will be required upstream on the left abutment.

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SITE CP-3509

Location: On Fuller Brook about 350 feet upstream from Lombard Road in Chicopee, Mass.

Springfield-North, Mass. USGS quadrangle

Latitude: 42°09'56" Longitude: 72°32'07"

Facilities Affected:

Facility	Elevation
House and sheds	165

Geologic Conditions: Both abutments are outwash sand and gravel. Depth to bedrock in the foundation is estimated to be from 80 to 90 feet. Waterholding capabilities appear to be poor. Leakage is expected through both abutments. Pervious borrow material for dam construction was located near the site; impervious material was not located.

Engineering Notes: The left abutment is recommended for the emergency spillway location. Even though the site has poor waterholding capabilities, the large drainage area may be able to maintain a small pool.

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SITE CP-3511

Location: On Spear Brook about 1400 feet upstream from South Mountain Road in Wilbraham, Mass.

Ludlow, Mass. USGS quadrangle

Latitude: 42°08'32" Longitude: 72°24'47"

Facilities Affected:

Facility	Elevation
South Mountain Road	485
Utility poles	485

Geologic Conditions: Both abutments are glacial till underlain by gneiss bedrock. Bedrock is exposed high on the right abutment. Depth to bedrock in the foundation is estimated to be from 10 to 15 feet. Waterholding capabilities appear to be good. Borrow material for dam construction was located near the site.

Engineering Notes: The left abutment is recommended for the emergency spillway location.

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SITE CP-3512 (Harris Pond)

Location: On Higher Brook near Holyoke Street in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
215	15	4	5850	9.1

Potential for Expansion: Limited; many houses line the shore.

Remarks: The dam is a 12 foot long stone masonry structure. Concrete in the sidewalls and outlet channel is deteriorated.

Ownership and Use: The site is owned by the Town of Ludlow and Walter Rozkuska. The site is used primarily for recreation.

SITE CP-3513 (Chicopee Reservoir)

Location: On Cooley Brook about 2300 feet upstream of the Massachusetts Turnpike in Chicopee, Mass.

Springfield North, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
167	30	40	3050	4.8

Potential for Expansion: Steep topograpny limits any significant increase in surface area.

Remarks: The dam is a 550 foot long earth-fill structure with a 20 foot top width. The upstream side is faced with concrete. The spillway is a four-step concrete chute structure, about 60 feet wide. Concrete in the sidewalls and chute blocks is badly deteriorated.

Ownership and Use: The site is owned by the Massachusetts Department of Natural Resources and is primarily used for recreation.

SITE CP-3514
(Chicopee Falls Dam)

Location: On the Chicopee River near the Route 141 bridge in Chicopee, Mass.

Springfield North, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	(Sq. Mi.)
(Elevation and area were not determined for river dams.)		10	457,000	714.1

Potential for Expansion: Limited; the dam is located in an industrial district.

Remarks: The dam is a 300 foot long concrete weir structure constructed on a rock terrace 5 feet above the riverbed. The concrete weir structure is about 5 feet high. The left end of the dam contains a gate house with two 4 foot by 6 foot concrete monolithic outlets.

Ownership and Use: The dam is owned by the City of Chicopee and is used primarily for fishing.

SITE CP-3515
(Indian Orchard Manufacturing Associates Dam)

Location: On the Chicopee River about 2300 feet upstream of West Street in the Indian Orchard section of Springfield, Mass.

Springfield North, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		20	440,700	688.6

Potential for Expansion: Limited; the dam is located in an industrial district.

Remarks: The dam is a 600 foot long stone masonry structure with flashboards. A gatehouse controls flow to a canal located on the left abutment. Brush is growing on the downstream side of the dam.

Ownership and Use: The dam is owned by the Indian Orchard Manufacturing Associates and is used for industrial purposes.

SITE CP-3516
(Western Mass. Electric Dam)

Location: On the Chicopee River near the Route 21 bridge in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		15	439,600	686.9

Potential for Expansion: Limited; the dam is located in an industrial district.

Remarks: The dam is a 125 foot long concrete dam with an ogee weir section equipped with flashboards.

Ownership and Use: The dam is owned by the Western Mass. Electric Company and is used for power generation.

SITE CP-3517 (Collins Dam)

Location: On the Chicopee River near the Chapin Street bridge in Ludlow, Mass.

Ludlow, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		7	436,100	681.4

Potential for Expansion: Limited; the dam is located in an urban area.

Remarks: The dam is a 300 foot long stone masonry structure. The right 200 feet of the dam is a weir section with flashboards. The left 100 foot section is about 5 feet higher. A gate controls the flow of water to a canal on the left side of the dam.

Ownership and Use: The dam is owned by the Trustees of the Great Northern Trust; Caretaker is the Wilbraham Industrial Park. The primary use is recreation.

SITE CP-3518
(Mungerville Dam)

Location: On the Chicopee River about 2200 feet upstream from the Route 116 bridge in Chicopee, Mass.

Springfield North, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
(Elevation and area were not determined for river dams.)		15	459,700	718.3

Potential for Expansion: Limited; the dam is located in an industrial area.

Remarks: The dam is a 325 foot long stone masonry structure with flashboards. A gate house, located on the left side of the dam, controls the flow into a canal.

Ownership and Use: The dam is owned by the Western Mass. Electric Company and is used for power generation.

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SITE CP-3519
(Szot Park Dam)

Location: On Abbey Brook near Front Street in Chicopee, Mass.

Springfield North, USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
135	5	30	900	1.4

Potential for Expansion: Limited; the pond is located in an urban park.

Remarks: The dam is a 350 foot long earth-fill structure with a 14 foot top width. The principal spillway is a concrete drop inlet leading to a 6 foot by 7 foot conduit. The emergency spillway is a 10 foot by 9 foot concrete monolithic conduit. A 40 foot long concrete apron leads to the emergency spillway. Concrete in the apron is deteriorated.

Ownership and Use: The site is owned by the City of Chicopee and is used primarily for recreation.

SITE CP-3520
(Van Horn Park-Upper Dam)

Location: On an unnamed brook at Armory Street in Springfield, Mass.

Springfield North, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
169	10	14	200	0.3

Potential for Expansion: Limited; the pond is located in an urban park, surrounded by housing. The small drainage area also limits the potential for expansion.

Remarks: The dam is part of the Armory Street Highway embankment. The spillway is twin concrete box culverts, 6 feet high by 17 feet wide with a concrete chute at the outlet. Heavy brush and trees are growing on the downstream slope of the dam. There is seepage through the dam and concrete in the chute sidewalls is spalling.

Ownership and Use: The site is owned by the City of Springfield and is used primarily for recreation.

SITE CP-3521
(Van Horn Park-Lower Dam)

Location: On an unnamed brook about 900 feet upstream of Armory Street in Springfield, Mass.

Springfield South, Mass. USGS quadrangle

Surface Elevation	Surface Area (Acres)	Height of Dam (Ft.)	Drainage Area (Acres)	Drainage Area (Sq. Mi.)
161	10	10	250	0.4

Potential for Expansion: Limited; the pond is located in an urban park, surrounded by housing. The small drainage area also limits the potential for expansion.

Remarks: The dam is an earth-fill structure. The principal spillway consists of a two-stage concrete riser with a 6 foot diameter conduit. The entire dam has brush growing on it. The stilling basin on the spillway outlet is filled with debris.

Ownership and Use: The site is owned by the City of Springfield and is used primarily for recreation.

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SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER SUBWATERSHED-CHICOPEE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV ++ TYPE (MSL)	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3501 DA= 0.98 SQ MI = 627 AC USGS QUAD-LUDLOW LATITUDE 42-12-51 LONGITUDE 72-28-08																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 285 CFS																
289.0	0	0.0		3		5.0	299.5 E	217	4.1	860	301.9	46	304.7	21	25	*****
296.2	100	1.9	1940	27	7180	12.2	298.7 E	187	3.5	1040	301.1	44	302.9	19	21	0.23
298.2	162	3.0	1390	34	6530	14.2	300.7 E	266	5.1	850	303.1	50	305.2	21	27	0.31
299.9	223	4.3	1150	41	6270	15.8	302.4 E	342	6.5	750	304.7	54	307.0	23	33	0.37
302.5	341	6.5	910	48	6480	18.5	305.0 E	477	9.1	650	307.4	61	309.7	26	45	0.48
SITE-CP-3502 DA= 1.70 SQ MI = 1088 AC USGS QUAD-LUDLOW LATITUDE 42-12-14 LONGITUDE 72-28-13																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 494 CFS																
270.0	0	0.0		4		7.0	278.5 E	376	4.1	850	281.0	99	284.0	21	50	*****
274.2	100	1.1	3410	42	8190	11.2	278.7 E	391	4.3	870	281.1	100	283.6	21	48	0.27
277.1	255	2.8	1530	67	5790	14.1	279.6 E	463	5.1	840	282.0	105	284.2	21	51	0.50
280.7	565	6.1	960	98	5500	17.7	283.2 E	842	9.3	640	285.7	127	288.2	25	82	0.81
282.5	742	8.2	820	108	5610	19.5	285.0 E	1043	11.5	580	287.2	136	289.7	27	97	0.97
SITE-CP-3503 DA= 2.26 SQ MI = 1446 AC USGS QUAD-LUDLOW LATITUDE 42-11-49 LONGITUDE 72-28-48																
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 622 CFS																
247.7	100	0.8	2270	26	8860	12.8	255.5 E	434	3.5	520	258.0	71	259.7	25	25	0.29
249.5	148	1.2	1860	31	9020	14.5	249.5 T	166	1.4	1660	256.4	63	258.4	23	20	0.37
250.8	196	1.6	1530	36	8260	15.8	250.8 T	214	1.7	1400	257.7	70	259.9	25	25	0.47
252.1	244	2.0	1190	42	6850	17.1	252.1 T	262	2.2	1110	257.9	71	259.7	25	25	0.55
252.5	261	2.2	1050	44	6180	17.5	252.5 T	279	2.3	980	257.5	69	259.2	24	23	0.57

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
(2) EMERGENCY SPILLWAY STORAGE AND COSTS ARE BASED ON TOTAL STORAGE, INCLUDING BENEFICIAL POOL.
(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-CHICOPEE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3504	DA= 0.57 SQ MI = 365 AC		USGS QUAD-LUDLOW											LATITUDE 42-11-31		LONGITUDE 72-28-18	
SITE RATING (3)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM									RUNOFF = 7.80 IN, PEAK FLOW = 166 CFS					
246.7	0	0.0		3		1.7	254.0	E	126	4.1	1240	255.7	56	257.9	13	3	*****
****THIS SITE LACKS SUFFICIENT STORAGE FOR BENEFICIAL WATER.****																	
SITE-CP-3505	DA= 2.50 SQ MI = 1600 AC		USGS QUAD-SPRINGFIELD NORTH											LATITUDE 42-11-15		LONGITUDE 72-31-43	
SITE RATING (2)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM									RUNOFF = 7.80 IN, PEAK FLOW = 727 CFS					
195.3	0	0.0		20		1.4	203.0	E	553	4.1	390	205.5	124	208.2	14	4	*****
198.0	100	0.8	2430	58	4190	4.0	202.5	E	501	3.8	480	204.8	120	207.1	13	3	0.30
199.6	210	1.6	1370	81	3580	5.6	204.1	E	673	5.0	430	206.5	131	209.0	15	4	0.50
200.8	320	2.4	1000	92	3460	6.8	205.3	E	825	6.1	390	207.6	139	210.0	16	5	0.67
202.0	430	3.2	750	100	3210	8.0	204.5	E	722	5.4	450	207.0	134	209.0	15	4	0.80
202.5	479	3.5	700	104	3250	8.5	205.0	E	780	5.9	430	207.5	138	209.5	16	4	0.86
SITE-CP-3506	DA= 0.68 SQ MI = 435 AC		USGS QUAD-LUDLOW											LATITUDE 42-11-16		LONGITUDE 72-24-52	
SITE RATING (3)	STREAM WATER QUALITY (B)		100-YR PRIN SPWY DESIGN STORM									RUNOFF = 7.80 IN, PEAK FLOW = 198 CFS					
292.0	0	0.0		2		5.0	308.7	E	151	4.1	960	311.1	20	313.7	27	19	*****
305.9	100	2.8	1560	14	11290	18.9	308.4	E	143	4.0	1090	310.7	19	312.2	25	16	0.20
307.7	129	3.5	1310	16	10600	20.7	310.2	E	178	4.9	950	312.7	22	314.2	27	19	0.23
309.6	159	4.4	1150	18	10210	22.6	312.1	E	214	5.9	850	314.5	25	316.2	29	22	0.26
312.5	217	6.0	960	22	9600	25.5	315.0	E	281	7.6	740	317.4	29	319.2	32	27	0.32
312.5	217	6.0	960	22	9590	25.5	315.0	E	281	7.8	740	317.4	29	319.2	32	27	0.32

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

** DO NOT USE FOR FINAL SITE SELECTION OR LAND ACQUISITION. **

SUMMARY DATA FOR POTENTIAL UPSTREAM RESERVOIR SITES

STUDY AREA-CHICOPEE RIVER — SUBWATERSHED-CHICOPEE RIVER

BENEFICIAL POOL							EMERGENCY SPILLWAY				DESIGN HIGH WATER		DAM			SAFE YIELD AT 95 PERCENT CHANCE
ELEV (MSL)	STORAGE AC FT	IN	COST PER AC FT ($)	AREA (AC)	COST/ SURF AC ($)	DEPTH AT DAM (FT)	CREST ELEV (MSL)	TYPE	STORAGE AT CREST AC FT	IN	COST PER AC FT ($)	ELEV (MSL)	AREA (AC)	TOP ELEV (MSL)	HGT FT	FILL VOL (1000 CY)	(MGD)
SITE-CP-3508 DA= 2.79 SQ MI = 1786 AC USGS QUAD-LUDLOW LATITUDE 42-10-32 LONGITUDE 72-27-19																	
SITE RATING (3) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 811 CFS																	
236.2	0	0.0		18		1.2	244.0	E	618	4.1	450	246.3	158	249.2	14	13	*****
238.7	100	0.7	3280	58	5670	3.6	245.2	E	784	5.3	420	247.2	169	250.0	15	16	0.31
240.2	205	1.4	1670	81	4210	5.3	244.7	E	723	4.9	470	247.2	167	249.7	15	15	0.52
241.3	311	2.0	1170	96	3780	6.4	245.5	E	825	5.5	440	247.7	174	249.8	15	15	0.69
242.5	416	2.8	900	109	3440	7.5	245.5	E	825	5.5	450	247.7	175	250.0	15	16	0.82
242.5	419	2.8	890	109	3440	7.5	245.5	E	825	5.5	450	247.8	175	250.0	15	16	0.82
SITE-CP-3509 DA= 11.10 SQ MI = 7104 AC USGS QUAD-SPRINGFIELD NORTH LATITUDE 42-09-56 LONGITUDE 72-32-07																	
SITE RATING (2) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 1811 CFS																	
161.7	100	0.2	3580	25	14540	16.7	164.2	E	260	0.4	1380	166.7	37	169.6	25	28	0.42
164.8	193	0.3	2120	33	12460	19.9	167.3	E	372	0.6	1100	169.8	46	172.8	28	38	0.71
169.7	379	0.6	1610	45	13540	24.7	169.7	T	468	0.8	1310	176.6	65	179.8	35	65	1.18
172.5	516	0.8	1310	53	12800	27.5	172.5	T	605	1.0	1120	177.1	66	180.0	35	66	1.48
SITE-CP-3511 DA= 0.46 SQ MI = 294 AC USGS QUAD-LUDLOW LATITUDE 42-08-32 LONGITUDE 72-24-47																	
SITE RATING (1) STREAM WATER QUALITY (B) 100-YR PRIN SPWY DESIGN STORM RUNOFF = 7.80 IN, PEAK FLOW = 134 CFS																	
468.9	0	0.0		1		8.8	479.7	E	102	4.1	1400	482.0	23	484.5	25	16	*****
479.9	100	4.1	2000	19	10500	19.9	482.4	E	158	6.4	1270	484.7	28	486.7	27	20	0.17
481.7	141	5.8	1670	23	10340	21.7	484.2	E	208	8.5	1130	486.5	32	489.0	29	26	0.21
482.5	157	6.4	1570	24	10250	22.5	485.0	E	227	9.3	1090	487.2	33	489.5	30	27	0.21

NOTES - (1) COSTS ARE BASED ON 1971 S.C.S. DESIGN CRITERIA AND COST DATA.
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(3) EMERGENCY SPILLWAY TYPE CODE- C=CONCRETE CHUTE, D=CONCRETE DROP, E=EXCAVATED, T= TWO SPILLWAYS, N= NONE
(4) TABULAR DATA ARE BASED ON PRELIMINARY INFORMATION. FIGURES SHOWN ARE PRIMARILY FOR COMPARISON PURPOSES.
(5) ELEVATIONS ARE SHOWN TO THE NEAREST 0.1 FOOT TO SHOW VARIATION BETWEEN DEVELOPMENTS ONLY, AND ARE NOT TO BE CONSIDERED ACCURATE TO THAT DEGREE.

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3501
3502
3503
3504
3505
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N

AIR FORCE BASE

LEGEND

WATERSHED BOUNDARY

DRAINAGE AREA ABOVE STRUCTURE

POTENTIAL SITE SHOWING BENEFICIAL POOL FOR LARGEST STRUCTURE

EXISTING POND OR RESERVOIR

Source - USGS Quad. Sheets
Ludlow - 1954
Springfield No - 1958
Springfield So. - 1958

CHICOPEE RIVER (CP-35)

CHICOPEE STUDY AREA

MASSACHUSETTS

EXISTING AND POTENTIAL RESERVOIR SITES

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

USDA SCS-HYATTSVILLE, MD. 1979

MUNICIPAL INDEX OF RESERVOIR SITE INFORMATION

MUNICIPAL INDEX OF RESERVOIR SITE INFORMATION

City or Town	Site No.	Narrative Information Page	Design Summary Page
Chicopee	3505	221	235
	3509	223	236
	3513	225	-
	3514	226	-
	3518	230	-
	3519	231	-
East Brookfield	3233	131	169
	3240	135	171
	3241	135	171
	3273	155	-
Hardwick	2928	56	82
	2940	62	86
	3001	87	91
	3002	88	91
	3004	88	91
	3005	89	92
	3006	89	92
	3007	90	92
	3101	93	111
	3102	94	111
	3103	94	111
	3104	95	112
	3105	95	112
	3106	96	112
	3107	96	113
	3108	97	113
	3109	97	113
	3110	98	114
	3111	98	114
	3112	99	114
	3119	102	-
Hubbardston	2905	47	76
	2906	48,63	76
	2907	48	77
	2908	49	77
	2909	49	77
	2911	50	78
	2943	64	-
	2945	66	-
	2946	67	-
	2947	68	-
	2948	69	-
	2949	69	-

MUNICIPAL INDEX OF RESERVOIR SITE INFORMATION

City or Town	Site No.	Narrative Information Page	Design Summary Page
Leicester	3211	123	164
	3265	150	-
Ludlow	2804	29	42
	2814	36	-
	2816	38	-
	3501	219	234
	3502	220	234
	3503	220	234
	3504	221	235
	3506	222	235
	3508	222	236
	3512	224	-
	3516	228	-
	3517	229	-
Monson	3317	184	203
	3318	185	204
	3321	186	205
	3323	187	205
	3324	188	206
	3325	189	206
	3328	190	207
	3335	195	-
	3336	196	-
	3337	197	-
	3338	198	-
	3403	210	216
	3404	211	217
	3406	212	217
	3407	212	218
	3408	213	218
	3409	214	218
	3410	215	-
New Braintree	2935	59	84
	2937	60	85
	2938	61	85
	3209	122	163
	3218	125	165
	3219	125	165
	3220	126	166
	3261	146	-

MUNICIPAL INDEX OF RESERVOIR SITE INFORMATION

City or Town	Site No.	Narrative Information Page	Design Summary Page
North Brookfield	3217	124	165
	3222	126	166
	3223	127	166
	3224	127	167
	3228	128	167
	3230	129	168
	3232	130	168
	3255	142	176
	3263	148	-
	3266	150	-
	3267	151	-
	3268	152	-
	3269	153	-
	3284	160	-
	3286	160	-
Oakham	2930	57	83
	2933	58	83
	2934	59	84
	2936	60	84
	2954	72	-
	2955	73	-
	3201	118	161
	3202	118	161
	3203	119	161
	3204	119	162
	3257	144	-
Orange	2750	17	-
Palmer	2817	39	-
	2818	40	-
	3117	101	116
	3118	101	116
	3124	106	-
	3125	107	-
	3126	108	-
	3127	109	-
	3128	110	-
	3258	145	-
	3301	177	199
	3302	178	199
	3305	179	200
	3306	180	200
	3314	183	202
	3334	195	-

MUNICIPAL INDEX OF RESERVOIR SITE INFORMATION

City or Town	Site No.	Narrative Information Page	Design Summary Page
Paxton	3205	120	162
	3206	120	162
	3207	121	163
	3208	121	163
	3256	143	-
Pelham	2801	27	41
Petersham	2713	11	23
	2714	11	23
	2715	12	23
	2717	13	24
	2718	13,16	24
	2719	14	25
	2720	14	25
	2721	15	25
	2722	15	26
	2751	18	--
	2752	19	--
Phillipston	2710	9	22
	2711	10	22
	2712	10	22
	2716	12	24
	2901	45	75
	2902	46	75
	2903	46	75
	2941	64	--
Princeton	2910	50	78
	2916	52	79
	2939	61	85
Rutland	2920	53	80
	2921	53	80
	2927	56	82
	2932	58	83
	2951	70	-
	2952	71	-
	2953	71	-
	2956	74	-

MUNICIPAL INDEX OF RESERVOIR SITE INFORMATION

City or Town	Site No.	Narrative Information Page	Design Summary Page
Spencer	3210	122	164
	3215	123	164
	3234	131	169
	3236	133	170
	3237	133	170
	3259	145	-
	3260	146	-
	3262	147	-
	3264	149	-
	3270	153	-
	3272	154	-
	3275	156	-
	3282	159	-
	3283	159	-
	3285	160	-
Springfield	3515	227	-
	3520	232	-
	3521	233	-
Templeton	2903	46	-
	2904	47	76
Wales	3327	189	206
	3329	190	207
	3330	191	207
	3331	192	208
	3332	192	208
	3333	193	208
Ware	3113	99	115
	3114	100	115
	3115	100	115
	3120	103	-
	3121	104	-
	3122	105	-
	3123	105	-

MUNICIPAL INDEX OF RESERVOIR SITE INFORMATION

City or Town	Site No.	Narrative Information Page	Design Summary Page
Warren	3238	134	170
	3243	136	172
	3246	138	173
	3248	139	174
	3249	139	174
	3250	140	174
	3251	140	175
	3252	141	175
	3253	141	175
	3279	158	-
	3280	158	-
	3303	178	199
	3304	179	200
	3308	180	201
West Brookfield	3229	128	167
	3231	130	168
	3235	132	169
	3239	134	171
	3242	136	172
	3271	154	-
	3274	155	-
	3276	156	-
	3277	157	-
Westminster	2944	65	-
Wilbraham	3401	209	216
	3402	210	216
	3405	211	217
	3511	223	236

APPENDIX

This report is one of a series dealing with reservoir sites. Previous reports in the series are:

1. Study of Possible Water Storage Areas, Ipswich River Watershed, January 14, 1965.

2. Study of Possible Water Storage Sites, Upper Hoosic River and Upper Housatonic River, February 1966.

3. A Study of Potential Reservoir Sites in Massachusetts, Hudson River Basin, January 1968.

4. A Study of Potential Reservoir Sites, Housatonic Study Area, Massachusetts, June 1969.

5. Inventory of Potential and Existing Reservoir Sites, Merrimack Study Area, Massachusetts, March 1970.

6. Inventory of Potential Reservoir Sites, Neponset Study Area, Massachusetts, October 1970.

7. Inventory of Potential and Existing Upstream Reservoir Sites, Thames Study Area, Massachusetts, January 1971.

8. Inventory of Potential and Existing Upstream Reservoir Sites, Parker and North Shore Study Area, Massachusetts, June 1971.

9. Inventory of Potential and Existing Upstream Reservoir Sites, Nashua Study Area, Massachusetts, March 1972.

10. Inventory of Potential and Existing Upstream Reservoir Sites, Deerfield Study Area, Massachusetts, November 1972.

Reservoir site studies are now in progress for the Millers, Taunton, Narragansett Bay and Ipswich Study Areas.

Reports will be prepared in future years for the remainder of the state. Basic data from which this report was prepared are on file in the Soil Conservation Service Office, 29 Cottage Street, Amherst, Massachusetts 01002.

RIVER BASIN STUDY AREA

LEGEND

Study Area Boundary

Watershed Boundary and Number

MASSACHUSETTS WATER RESOURCES STUDY

MASSACHUSETTS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JULY 1971